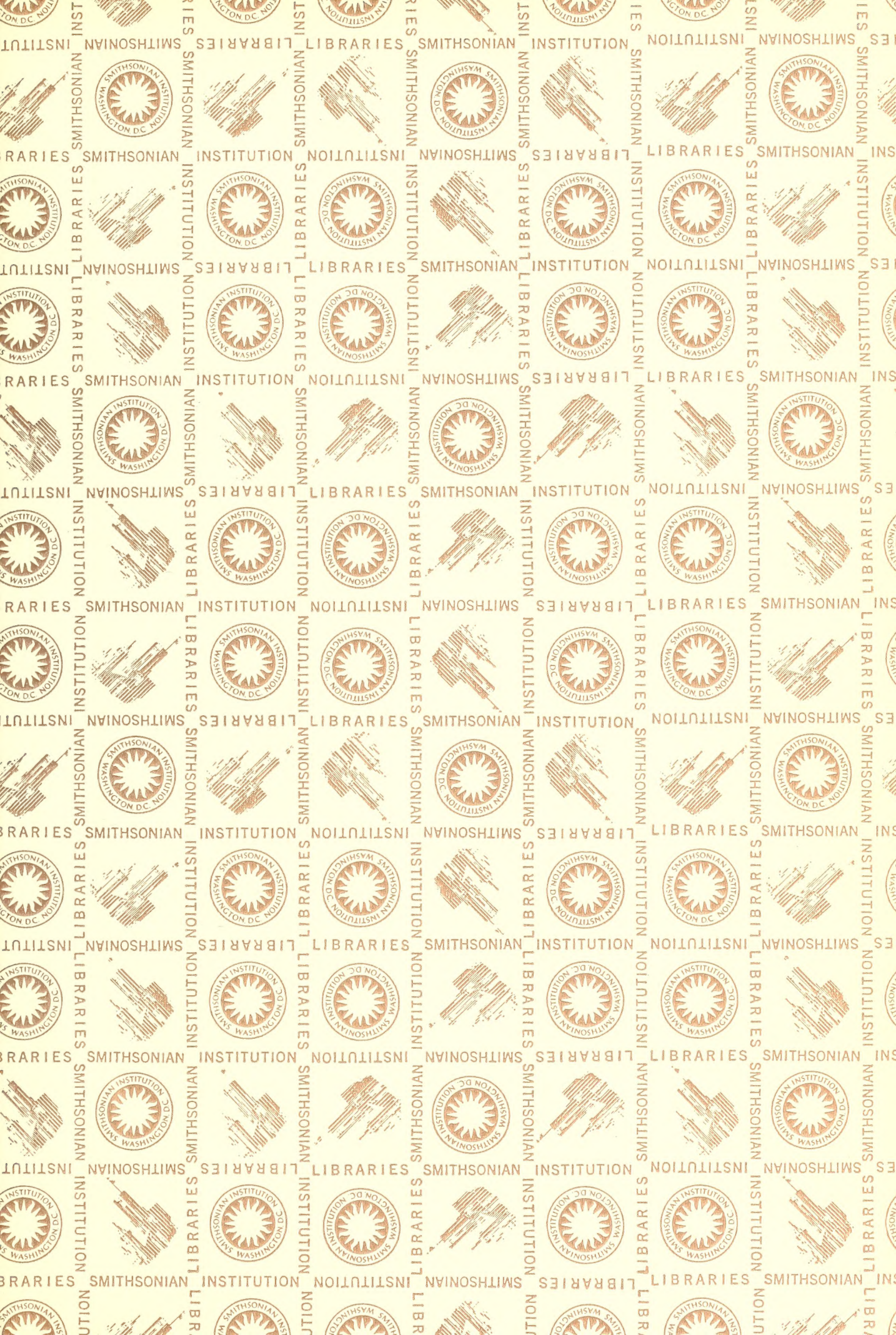

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THE AEROPLANE

Edited by C. G. Grey

WEDNESDAY JULY 3 1918.

Vol. XV. No. 1. SIXPENCE WEEKLY [Registered at the G.P.O. as a Newspaper.]

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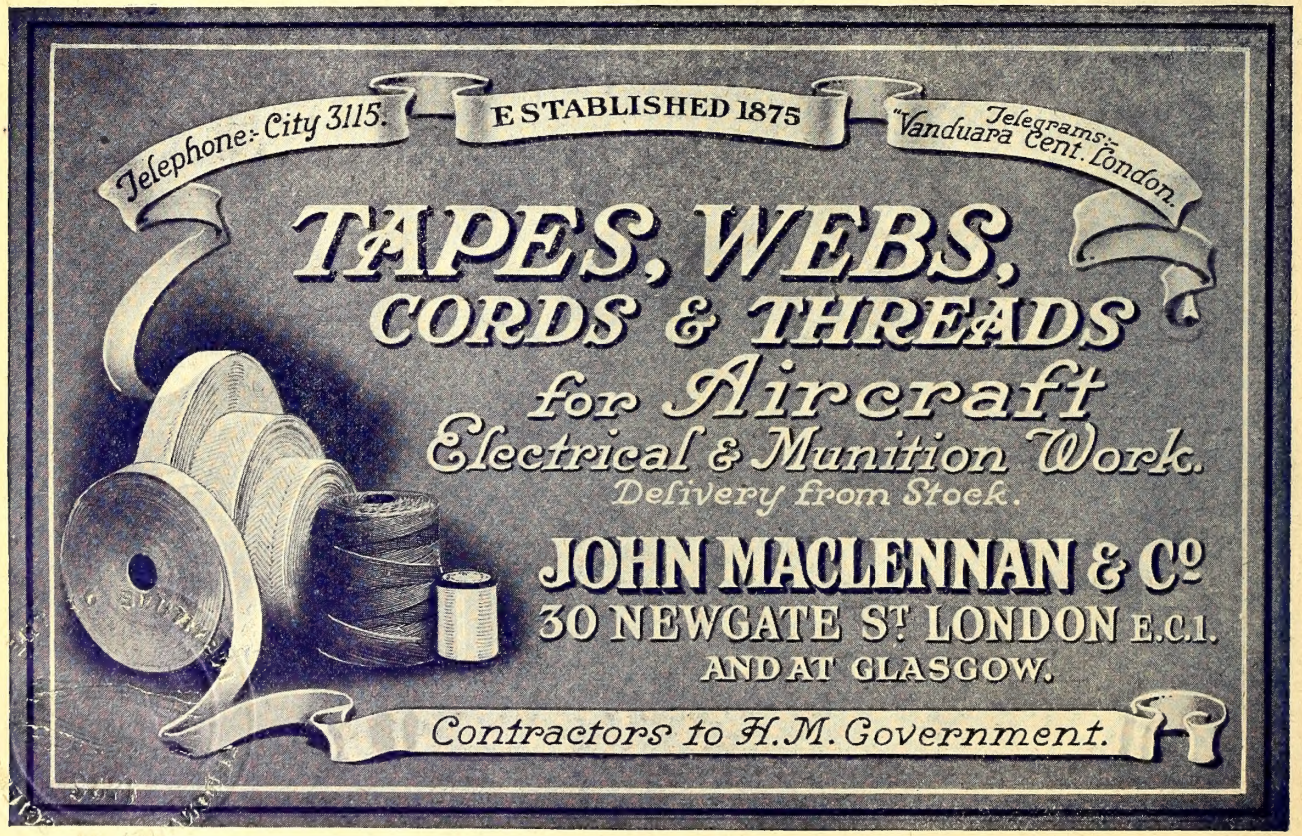
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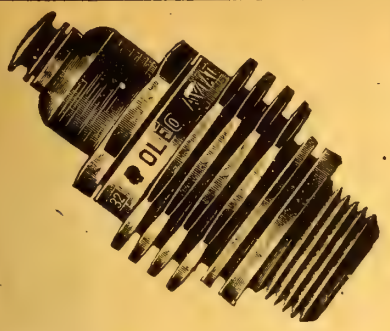
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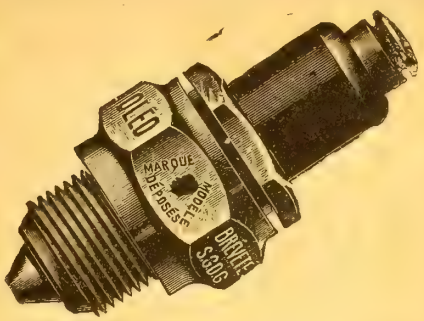

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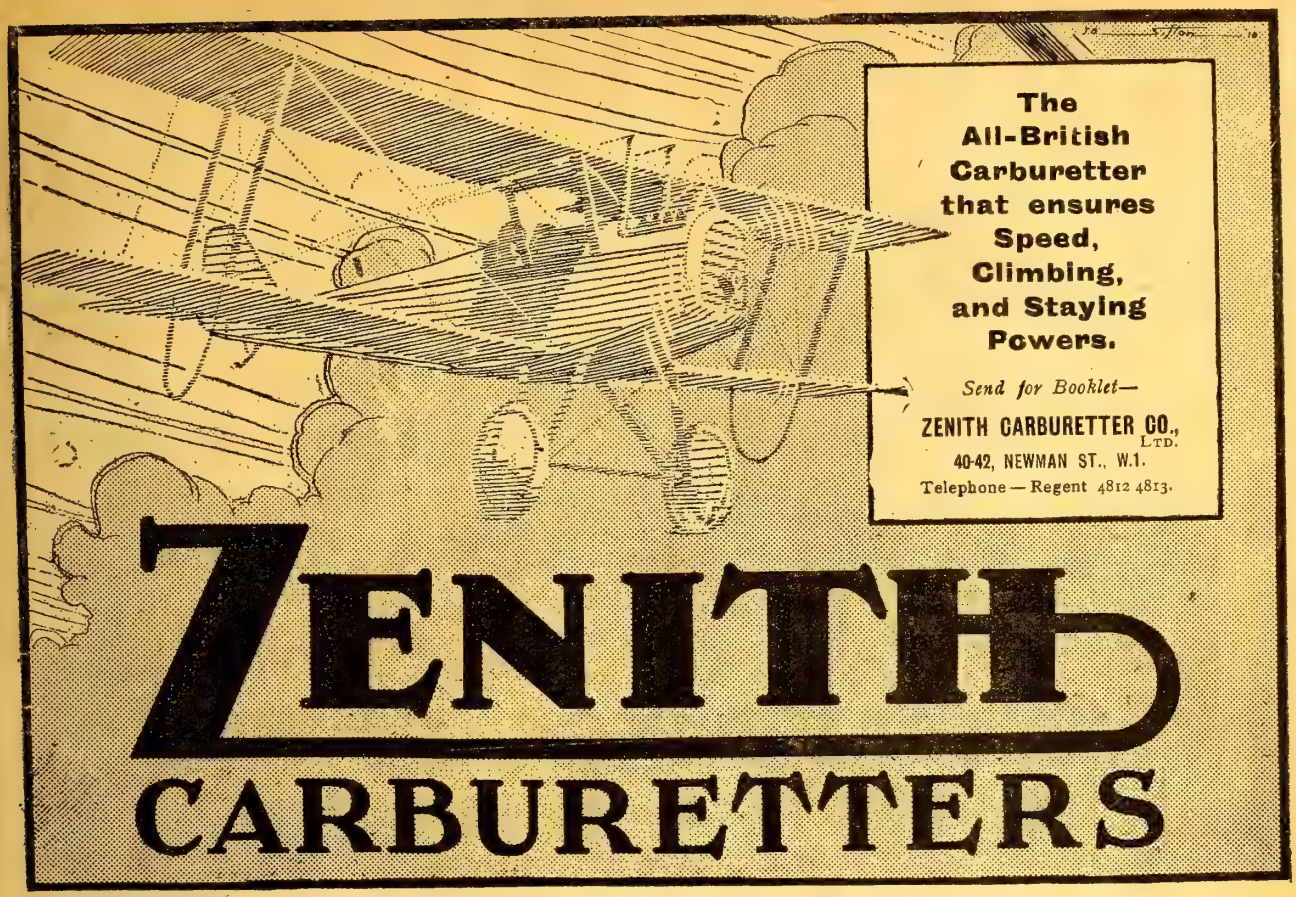
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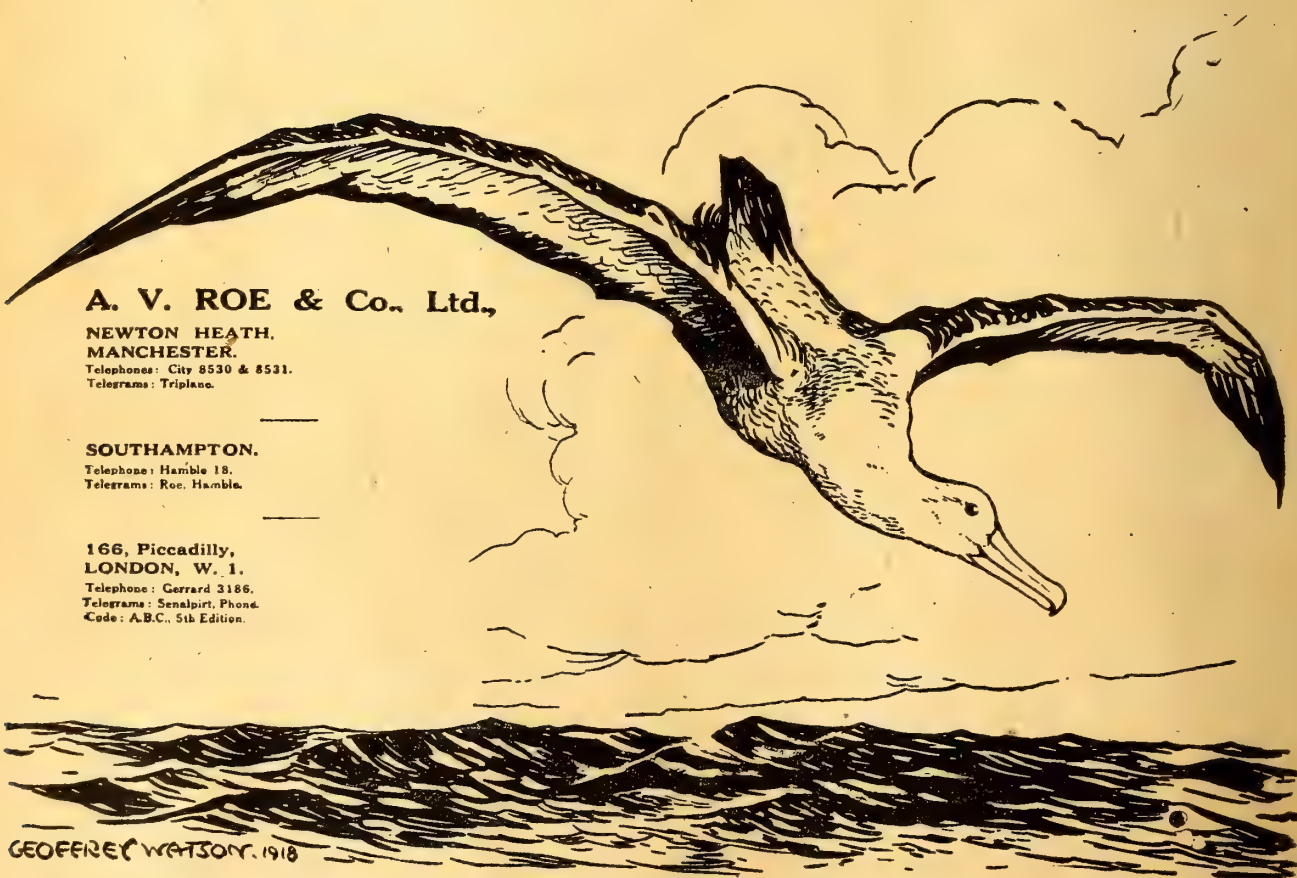
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Telegraphic Address: "Aileron, London." Telephone: Mayfair, 5407.
Accounts, and all correspondence relating thereto, should be sent to the Registered Offices of The Aeroplane and General Publishing Co., Ltd., Rolls House, Breams Buildings, E.C.4.
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ON UNIFORMS, BADGES, CHEVRONS, AND SUCH.

It is quite remarkable, if not quite surprising, how exercised in mind the R.A.F. still seems to be about its uniform. Yet after all it is only human nature to devote so much attention to such a seemingly minor detail. It has been said by some great philosopher that a tight pair of boots will cure all mental or psychological worries, merely by concentrating the attention of the wearer on one matter to the dispersal of everything else. On the same line of argument the immediate question of uniforms may divert the attention of the R.A.F. from graver matters.

For the moment the blue-grey uniform seems to have ousted the great Sam Browne question from its premier position of interest. People object strenuously to the blue kit for a variety of reasons. In the first place it means more expense, for no Government allowance ever yet covered the cost for which it was supposed to allow. One is told by a perfectly good tailor person—not a Naval outfitter—that the blue cloth costs from 25s. to 30s. per yard, and that a complete suit, which one rather hesitates to call a uniform, will cost anything between £10 10s. and £15 15s.

Doubtless a paternal Air Council, assisted by its financial advisers, will hand out the first £10 10s. without demur, but the question arises as to how often that payment will be renewed. The aforesaid tailor person is of the opinion that, unless the British Dye Industry has gone several better than anything the Germans did before the war, the æsthetic blue-grey will fade in a remarkably short time into a kind of indeterminate slate colour, and thence into what in the days of our childhood we used to call a dun-duckety-mud-colour.

As the uniform of a dismounted section of Illyrian Hussars in the chorus of a musical comedy, with silver frogging on the tunic, and silver lace plentifully plaistered elsewhere, and with patent-leather boots with silver tassels, that art shade would look quite well. Also, it would only appear for a couple of hours nightly under the mildly actinic rays of electric and lime light, and so its chaste beauty might well survive the run of the piece—provided that the humour and music were no better than the average stuff from which one suffers in these days.

Even as a "walking-out" suit it might last for quite a while, if worn chiefly in the evenings after Summer Time has ceased and the evenings begin at their proper hour, and if packed away carefully in tissue-paper when not in use.

But for a field-service kit to be worn regularly at home and abroad it seems to be about the worst possible choice of colour which could have been made. Think of the effect of a large blob of vulgar motor oil on that delicately nebulous grey-blue *chiaroscuro*. The artistic mind shrinks from the idea of such sacrilege. It would be as bad as a splash of marking ink on the lawn sleeve of a bishop, or a dash of white-wash on the episcopal apron.

Protective Colouring.

Somehow khaki seems pre-ordained to be dirty; in fact, the word *khaki* itself is, one gathers, the Hindustani for mud, or words to that effect. It is true that khaki does not fade away into the European landscape as it does in the East, and that the German field-grey and the French horizon-blue are both preferable, but the consideration of protective colouring in that particular sense does not enter into the R.A.F. uniform.

If the people who chose the R.A.F. uniform had not been artists, or *artistes*—one suspects that both were concerned—but merely practical aviators, they would have chosen a sort of oil-brown, which would probably have worked out at something between a dark khaki and a deep claret colour, so that it would not have shown oil and mud stains so obviously. Such a kit, besides providing protective colouring against oil and dirt marks, could have been made to look quite smart, and with black belts and buttons and badges would have been mildly reminiscent of the Rifle Brigade.

With the blue stuff, no matter how carefully the wearer may guard it with Sidcot suits and other forms of overalls, it is bound to become oily, for overalls after a while become like motoring gloves, and acquire as much oil inside as outside. An oil-stained, sun-bleached, blue-grey suit will certainly look worse than an equally war-worn khaki uniform.

Therefore it is just as well that the Authorities have agreed that officers need not buy blue uniforms till they have worn out their khaki, for one is strongly of the opinion that by the time the majority of the new khaki kits are worn out it will have been found that the first blue uniforms will have proved quite unsatisfactory and sundry alterations will have been made. Either a different colour altogether will have been standardised, or the delicate pastel shade will have been changed for some more serviceable grade of blue.

Popular Rumours.

As to what the blue uniform is to be ultimately, all sorts of weird statements are about, and even now the fittings and accessories, so to speak, seem to be unsettled. At first it was said that a black Sam Browne was to be worn, with black cord shoulder-straps—like those in khaki worn by some cavalry regiments—and that black shoes, boots, or field-boots were to be worn with this kit. Which, barring the blue, would not look at all bad.

Some humorist has suggested that bit-burnishers—like those worn by Indian cavalry and some yeomanry regiments—should be worn instead of the cord shoulder-straps, but that they should be japanned black to match the other black fittings, and that black rank marks and badges should also be worn. "Black marks for bad bird-men" was what he suggested for a newspaper heading when the alteration was announced.

However, now it seems fairly certain that the much-desired Sam Browne is not to be worn—except by the Australian F.C., who still remain part of the Australian Army and retain their old uniform. Also, it is said that the assorted ironmongery in the way of dickie-birds and crowns is to disappear from the sleeves of the jacket, field-service, officers, for the use of. Thus the bird will in future only appear in the cap-badge, which seems right and proper.

It is also said that on the blue uniform the rank-stripes on the sleeves will be of gold lace, like those on Naval uniforms. This seems an unnecessary expense with which to begin, and a continual expense thereafter, for Naval gold lace goes shabby far sooner than khaki braid. At the same time, khaki braid on a pastel blue would not look pretty, and blue braid would be unrecognisable unless one grabbed every officer affectionately by the arm and perused his cuff at close quarters, before hailing him by his rank.

"Down the Strand."

Apropos retaining the bird only in the cap-badge, one hears also that the palm leaves or olive branches or uplifted tails or whatever the elevated antennæ which are commonly called "bananas" may be, are to disappear from the cap-badge, a fact which will probably be hailed with delight by everybody except the person who designed them and the embroiderers who waste the nation's time and money in making them. A ribald wit at the Air Ministry has suggested that the bananas were incorporated in the design because the national ballad whose chorus begins "Let's all go down the Strand!" contains a reference to that succulent fruit, and so they help the wearers to memorise the locality of Headquarters in time of mental stress.

Apropos memorising, one R.A.F. captain at any rate is pleased with the rank-marks on the cap-band, which most people call wound-stripes. His purely selfish reason is that his telephone number at home is "eleven eleven," and he always used to forget it till he took to wearing it on his hat.

As regards rank-badges in general, if any alterations are to be made, someone might think out a handy way of indicating on the R.A.F. hat the difference between a major, a lieut.-colonel, and a full colonel. The three lower ranks are clearly to be distinguished, but when once an officer attains to the dignity of a brass hat he might be anything in between a captain and a brigadier-general unless one can see his sleeves at close quarters.

Furthermore and besides there is that old, old question of staff-tabs to settle. It has been said semi-officially that staff-tabs are to be revived, but they seem to be a long time in recovering their vitality. And so the highly important staff-captain, arriving as proxy for a general officer in the presence of a major, may well be left to kick his heels in a squadron office while mere flight commanders claim precedence for their local affairs over his Headquarters business.

A Serious Suggestion.

While on this subject of distinguishing badges, one would like to offer in all seriousness a workable suggestion. Now that the R.A.F. has grown to such an enormous size it might very well be divided up clearly into permanent sections, each with its own badges, as in the Army. In the first place the sea-going section must tend to become more and more distinct from the land people, so there at once is a very clear line of demarcation on each side of which the whole life and training of the aviators are entirely different.

In the sea-going section itself there is a fairly sharp division between coast-patrol seaplane people and those who live on and fly from ships. Then, again, the airship people are quite apart from the rest. And the kite-balloon people are, again, distinct from the airship people. They are, in effect, all pure Navy, to such an extent that they might well wear uniforms quite different from those of the land aviators.

Among those who operate altogether on land the lines of distinction are also clearly drawn. In the first place the Independent Air Force must ultimately tend to become more and more distinct from the brigades or divisions of the R.A.F. which co-operate with the Army. So that at once makes three distinct parts of the R.A.F., pertaining respectively and entirely to the Navy, the Army, and the Air.

But in all three there are sub-divisions, which are as clearly defined as are horse, foot, and guns in the Army. For example, in the Independent Air Force proper there are long-range night bombers, long-range day bombers, and, presumably, fighting escorts. The man who is a specialist in one job is not likely to find much time to become really clever at any of the others.

In the Army Flying Corps—as one might call it for lack of a better name—there are short-range night bombers, short-range day bombers, fighters, reconnaissance specialists, photography specialists, artillery spotters and infantry contact and ground-strafing specialists. All are really distinct jobs, at least as distinct as the work of garrison, field, and horse artillery, machine-guns, tanks, and infantry.

The Spirit of Emulation.

Would it not therefore be as well, perhaps during the war, and certainly after the war, to have three distinct uniforms for the three main branches of the R.A.F. and to have distinctive badges for the different branchlets of those branches? Even inside the Services competition is good for trade, or, in other words, the spirit of emulation is good for efficiency. It would be far easier to foster *esprit de corps* in small units in such a way than to keep up the same level of enthusiasm in a vast and somewhat amorphous force such as the rapidly growing R.A.F. is bound to become unless it is clearly sub-divided.

One knows of crack squadrons, and of squadrons that are not quite so good, and there is a certain amount of emulation between squadrons for that reason. But a squadron is too small a unit, and its personnel keeps on changing too rapidly, for the same feeling of rivalry to be maintained permanently between squadrons as exists between regiments. Therefore one offers the foregoing remarks as a very brief and very rough idea for a line of action which might be initiated with a view to raising still higher the *moral* of the R.A.F.—high as it is already.

Observers' Badges.

There is another little point in connection with badges and distinctions which perhaps may be worthy of attention, that is the question of when is an observer not an observer? Some of us can remember when the observer's lot was not as pleasing as it is even to-day. In those days the observer was just anybody who was put into an aeroplane to look over the side and "go and find out and be damned"—as Mr. Kipling has it.

He knew that he would hardly be thanked for doing his damnedest to win the war, and he was an absolute outcast where such things as promotions, honours, and distinctions were concerned. He was only "mentioned" in the casualty list, and then his pilot, in his plain tales from the heights, would explain what a beastly reconnaissance he had just had and that, yes, now he came to think of it, his observer had been killed—poor devil, and he was quite a good observer, too.



"Surely it's time this youngster *shared* his toys!"

After a while the observer began to be appreciated at something like his worth. His plaint went up, even unto the highest Authorities, and a mandate went forth that a Badge should be given to the observer—after he had earned it. And a sigh of gratitude burst forth from those who, strictly among themselves, grimly called one another "pilot-fodder."

During the summer of 1915 the pattern of the badge was approved: "A duck's egg, with a liver wing rampant." And the tailors supplied it on request. The duly-qualified observer learnt that he was then not only the pilot's victim, he and his liver wing became a stock jest, and he grinned amiably when his friends, military and civilian, asked him whether he was learning to fly and had got half a pilot's badge for having passed half his exams.

However, he was told by those in High Places that his badge should be regarded as a decoration, only given to those who were intimately familiar with Archie and Fritz and "two-tails"; with B.Es. and with R.A.F. engines, and, very much *and*, with pilots; with automatic pistols and French carbines—from the butt-end—and Hun machine-guns—from the business end; with fair weather and dud weather; with dewy dawn and that cold feeling in the pit of the stomach; with dusky eve and fog-shrouded landing grounds; with camera and with Brouget; with batteries that would not fire because shells they had not; also there were "lamps." All of which trials are unknown to the happy observer of to-day, with his perfected training, his perfected apparatus, his very much improved aeroplanes, and his by no means half-bad pilots, who sit in the front seat

and collect it first if there is anything coming to them.

The Balloonatics.

Now, no joke is a really good joke unless there is a sequel. Therefore, when the aeroplane observer had won his right to recognition, and was no longer regarded by pilots or by the Powers-that-Were merely as luggage, a new atrocity was forced on the R.F.C. It was singularly unbeautiful. It had many names. It was a gas-bag, a sausage, a Rupert, a term of reproach. It was nobody's child, nobody loved it, and most people mistrusted it. One writes with feeling, for one had more than a little to do with its infliction on the R.F.C. against their will.

Certainly the work of the Balloonatics at first somewhat resembled the curate's egg. But it came to pass that in time even these acrobatic parachutists had to be recognised. Unto them also the observer's badge was given. And, before Heaven, they worked for it.

They sat on the end of a string waiting for it to break, and quite often they were not disappointed. They helped to make field telephony what it is now, quite passably good. In time they convinced the gunners that they really could see better than the man on the ground, no matter how F. his O.P., and that they could observe to good effect.

They were "cushy" victims of the promiscuous Hun-bird and the B.B., or long-range, time-fuse fear producer, and naturally they made a hobby of high-jumping—or rather low-jumping—aided by an apparatus called a parachute, which when no longer fit for its job made excellent material for pyjamas. Also they and their ground-crews established themselves as ports of call for weary fighters on foot. Their lives were far from being dull, and they earned their living, if not by the sweat of their brow, at any rate by the chill of their feet. They also deserved their observer's badge. It was not given for nothing; it was a clean receipt "For value received."

But in these days, those who are for a period on soft jobs or on leave at home, and who, on occasion, pursue the lotus paths of pleasure in the streets of Bond and Piccadilly, may there perchance see their hard-won badge displayed by officers who have never been to France, nor to any other theatre of war, unless, peradventure, it be to "The Better 'Ole" or the like simulacrum of the Greatest Game of All.

Some of these wearers of the duck's egg and liver wing—now at last become a badge worthy of honour—might not rightly read a map of the Regenten Strasse, W.1, if it were set before them, nor recognise a hostile gun-flash, nor know what type of battery best befits what particular sort of shoot, nor perceive a shell-burst. Nor have they wondered 'twixt heaven and earth whether enough of that life-saving silk tissue could be wangled wherewith to build pyjamas for self or for the nightie of Amaryllis.

They may have read or have been told of Hun machine-guns and "tracers," they may have thought that "Archie" was a pretty enough name for little puffs of smoke in the air. They may be highly trained in the theory of observation in so far as any school, except the school of active service, can teach that eclectic art. But the war-worn aeroplane passenger and the tried and trusty balloonatic who has won the badge of the half-flier on active service does badly want to know whether these are really observers.

An Active-Service Plaint.

Some of the war-worn allege, too, that they have seen R.A.F. officers whose contribution to the war has been chiefly the beautification by their presence of the lounges of hotels, mostly provincial, and even less strenuous in their demands on the energy than is the Hotel Bolo, displaying, in addition to "Crash Crosses," or suchlike orders and decorations, the red and blue chevrons which properly indicate "service at a front," and the knowledge and fear of shots fired in anger.

Be it said that some who are fully entitled to wear such chevrons, at any rate in silver and gold, by virtue of having served in a ship in commission, to wit a coast patrol station, do not mount their chevrons for shame that despite their best endeavours they have never crossed the sea, though many a weary mile have they flown over it. Nevertheless it is said that some others who would not know a Hun if they saw him advertise two or three years' acquaintance with him. There seems therefore to be room somewhere for a gentle but particularly careful comb-out of chevron-wearers.

As Hamlet asked "What's in a name?" so one may ask "What's in a badge?" Yet when one comes to think it over there may be much in a badge, sometimes too much. Whether it be cap-badge or collar-badge, rank-badge, pilot's badge, observer's badge, or active-service chevron, there may be enough in it to cause mere irritation with the designer or acute anger with the wrongful wearer, or, contrariwise, to promote strong *esprit de corps* among wearers of like badges, or healthy emulation between wearers of unlike badges. In good sooth there are more things 'twixt badges and badges than were dreamt of in our philosophy, till someone else began airing his opinions on the subject.

C. G. G.

PRAISE FROM THE C.-in-C.

The following telegram, sent by Field-Marshal Sir Douglas Haig to the G.O.C., Royal Air Force, France, was published on July 2nd:—

"I wish to express my high appreciation of the brilliant work performed by the Royal Air Force throughout the recent operations. By defeating the enemy's aircraft, and thereby carrying out the important work of observation without interruption, and by harassing the enemy's movements by bombing and machine-gun fire, the Royal Air Force have rendered all-important assistance to the other arms. Their constant successes have greatly encouraged their comrades in the field.

"I cannot express in terms of sufficient strength my admiration for the gallantry and skill of all ranks of the Royal Air Force."

THE NEW DISEASE.

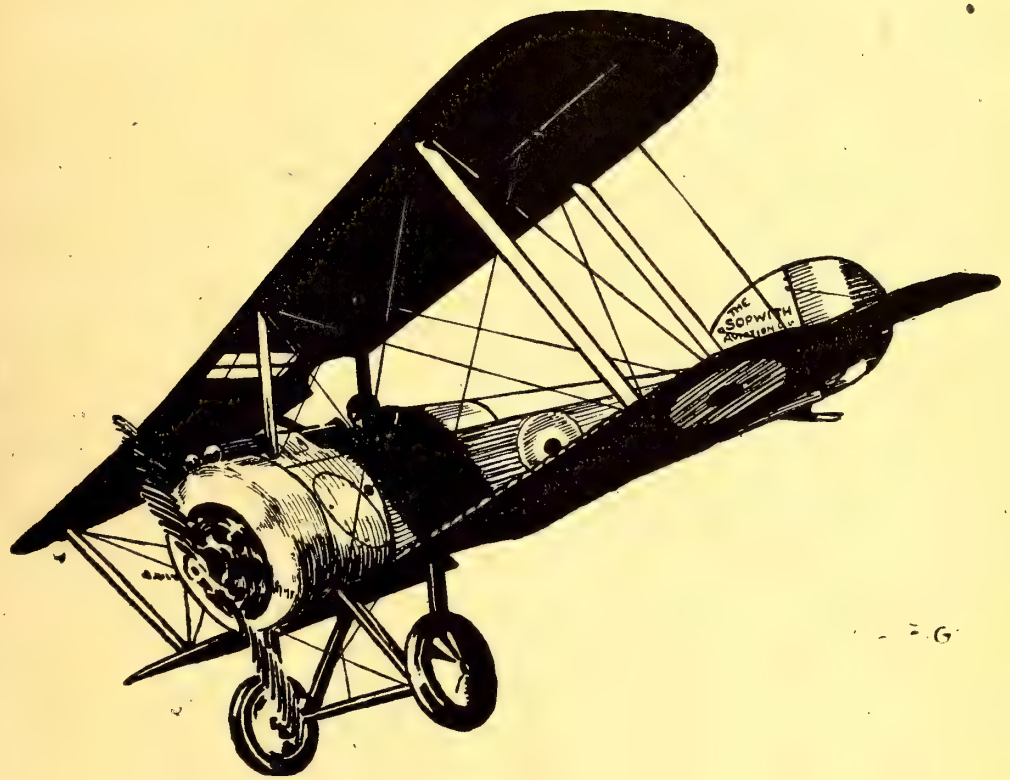
It seems that those light-hearted and quick-witted young officers of the Flying Services who nicknamed the Hotel Cecil the Hotel Bolo may after all have made a mistake in diagnosing the epidemic disease which has caused the inhabitants to hold up progress therein to such a remarkable extent. Is it not possible that the disease in question may not be Boloism, but Botulism?

We are told by our daily news-sheets that Botulism is a form of sleeping sickness. From an experience of Government departments extending over about 30 years one is inclined to believe that the disease has been endemic in such departments for centuries. It may be that it has only recently become epidemic.

That would seem to account for the time it takes to get things done, especially technical affairs, which need the attention of very wide-awake people. Those who wander dreamily through the mazes of technical calculations, arguments, and correspondence, happily oblivious of the fact that there is a war in progress, and that men at the front are constantly in need of newer and better engines and aeroplanes, seem to need waking up, or else replacing by people who can keep awake.

Apropos the Hotel Bolo, the latest label for one of its latest branches applies to the new home of the Aeronautical Inspection Department. The Service humorists have named it Hindenburg House, as a compliment to the ruthlessness of the A.I.D.

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

Aeronautical Inventions.

On April 1st the Air Inventions Committee became a part of the Air Ministry, and it carries out its duties under the general direction of the Air Council, and in co-ordination with the Advisory Committee for Aeronautics, presided over by Lord Rayleigh. The Committee, as now organised under the Chairmanship of Sir Horace Darwin, consists of a small permanent establishment and an advisory body of men eminent in aeronautical science and engineering. Among them are Sir Richard Glazebrook, Sir Dugald Clerk, Mr. F. W. Lanchester, Professor Petavel, Professor Callendar, and Professor Lees, and a certain number of representatives of the Air Services and of the Technical Departments of the Air Ministry. The offices of the Committee are 2, Clements Inn, Strand, W.C.2, and the Committee will be glad to receive any inventions and suggestions relating to the Air Services, excepting those connected with airships, which should be addressed to the Admiralty.

What is Wanted.

The Air Ministry wishes it to be known that the Air Inventions Committee, which was formed about nine months ago, has now received and examined upwards of 5,000 inventions and suggestions relating to the Flying Services.

It is regretted that, owing to war conditions, a detailed account of their investigations cannot be published, but the experience of the Committee indicates that it may be possible to publish certain information which will facilitate the work both of the inventors and of the Committee.

The following statement has been drawn up with this object in view, but it is realised that it is incomplete for the reason just given. It is appreciated also that inventors are placed at great disadvantages in present circumstances, for, unless immediately connected either with the Flying Services or with the Aircraft Industry it is almost impossible that they should be acquainted with the most recent developments. So rapid has been the recent rate of progress that it is difficult, even for those in close contact with the Royal Air Force, to keep abreast of all the latest improvements. Again, it is practically useless for inventors at the present time to submit inventions which would necessarily take a long time to develop, the requirements of war and the conditions of labour and material making it impossible for the committee to support proposals of this nature.

Radical Changes.

Generally speaking, and as far as the period of the war is concerned, no very startling change in the present types of aircraft is expected, although improvements in parts and also in details are always possible and may produce very important results.

The stage of development in construction which has now been reached is such that major improvements can only be expected from those possessing the requisite scientific and mechanical knowledge, skill and experience. Thus, radical changes in the shape of the wings of aeroplanes, the body, and the airscrews are only possible after long and patient research carried out in aeronautical laboratories.

Helicopters, Ornithopters and Orthopters.

Again, many inventors have forwarded proposals for helicopters and aircraft of this nature which, if an efficient design can be produced, would possess certain advantages, though probably not so great as was once imagined. Others have suggested flapping wings and rotatory planes.

Such schemes do not give any promise of being developed for use during this war, and in any case would require some years of experiment before they could be regarded as practical proposals.

Minor Details.

As regards minor improvements, inventors should bear in mind that many details such as turnbuckles, clips, etc., are now standardised, and a change would only be justified by some very marked superiority.

Safety Devices.

Safety devices for preventing crashing of the machine and the pilot form a numerous class. The chief of these is the parachute, either applied by a harness to the pilot or directly attached to the machine. Those who have seen a passenger dropped by a parachute from an aeroplane for exhibition purposes often fail to realise the conditions under which a parachute may have to be used as a safety appliance. Then the machine may be out of control, dropping at a velocity of 150 to 200 miles per hour, or spinning downwards in flames.

Many other safety devices such as automatic stabilisers, windbrakes, etc., have been proposed at various times. The additional weight entailed by the use of any of the suggested safety appliances must remain a very serious factor for so long as war conditions prevail.

Engine Problems.

The engine is the heart of the aeroplane, and on its reliability depends the safety of the pilot. Persons acquainted only with motor-car engine practice sometimes do not realise the exacting conditions under which an aeroplane engine must work.

The engine must be capable of running for the whole of the time of flight at its maximum power. The lubrication and ignition must be perfect, and the engine must not become overheated. The rating applied to aeroplane engines is its weight per horsepower, and engines are now being produced which show surprising results in this respect.

Inventions which differ radically from present-day practice (such as the internal-combustion turbine) have small possibilities of being adopted, for successive design and reconstruction entailing probably several years' work are necessary before there can be hope of satisfactory results. In view of the shortages of materials and labour at the present time, it is impossible to embark on the production of any new type unless it is demonstrably superior to existing types and possessed of definite and immediate advantages over them.

Silence and Hearing.

A subject which is intimately connected with the power-plant is its noise. This constitutes one of the disadvantages of an aeroplane.

For night flying a method by which it would be possible to hear from one aeroplane the approach of another, would be of great advantage. The engine can be silenced without serious disadvantages, but the noise of the airscrew and the hum of the wires are so great that silencing the engine is not sufficient.

Bomb Ideas.

Many proposals for the projection of bombs, and grenades of flame, and of poisonous gases have been received.

The trailing bomb or grapnel for attacking enemy aircraft and submarines is a favourite suggestion from inventors. This device was tested before the war and at various times since, but has been abandoned in favour of more effective methods.

Instruments

Many hundreds of inventions and suggestions for inclinometers and instruments for straight flying and accurate bomb-dropping have been investigated. Efficient and well-designed instruments for these purposes have been available for some time past, but it is quite possible that improved forms may be produced, though it is scarcely likely that this can be done by anyone who does not possess the necessary scientific and mechanical knowledge required for an investigation of this nature.

Some inventors entirely disregard the action of centrifugal force upon pendulum and spirit-level devices.

A large number of gyroscopic instruments have been proposed which show insufficient knowledge of the correct application and limitations of a gyroscope.

Anti-Aircraft Defence

Anti-aircraft devices of various kinds are constantly suggested, but now contain very little new matter for consideration, as such proposals have received the careful attention of the authorities for a long time past, and have been the subject of much trial and experiment.

Any proposals of a practical nature which contain features of novelty and may be of utility are discussed with the assistance of the Royal Air Force.

A Note of Appreciation.

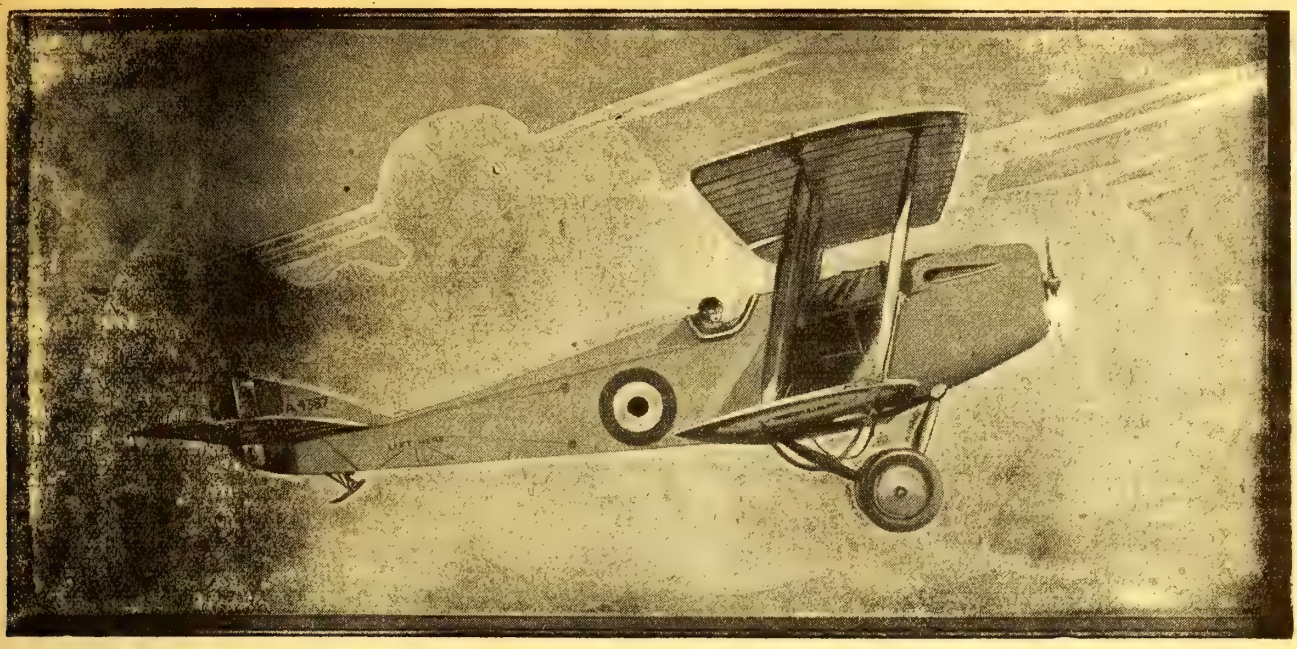
The Committee fully appreciate the genuinely patriotic motives which inspire most of the communications which they have received, and it is with the object of encouraging the submission of useful and well-considered proposals that this statement is issued. Inventors should, however, bear in mind that the somewhat obvious proposals which might have been useful in an earlier stage of the war are now no longer serviceable.

By following the general tenor of the above suggestions, inventors will greatly assist the Committee in the execution of their responsible duties.

ENTIRE DISSOCIATION.

Readers of The Aeroplane are hereby advised that there is no connection whatever between this paper and a book entitled "The Aeroplane," which, one gathers, is about to be published by Charles Griffin and Co. Advertisements for this book are being solicited by Colman's Advertising Service, and several business firms have made inquiries on this point, so that evidently confusion exists, and it is therefore desirable that the matter should be made perfectly clear.

The fact that the advertisement canvassers for the book use a rubber stamp bearing the words, "The 'Aeroplane'" has, one gathers, led people to assume that they are canvassing on behalf of this paper, and any reader who hears of this practice is invited to communicate at once with this office, sending the letter on which the stamp appears.



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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

THE MERITORIOUS SERVICE MEDAL.

It is announced in the "London Gazette" that the King has approved of the adoption of the Medal for Meritorious Service by the Royal Air Force for the recognition of valuable services rendered in the field by Warrant Officers, Non-Commissioned Officers, and men, as distinct from actual flying service. The first announcement of awards of this medal was published in the "London Gazette," dated June 3rd, 1918.

THE ENGINE QUESTION.

Mr. Joynson-Hicks asked in the House of Commons on June 27th what percentage of the output of British engines promised to the House of Commons by the Prime Minister in the Secret Session of July, 1917, on the authority of Sir William Weir, has been fulfilled.

Mr. Kellaway writes in reply:—No record is available of statements made at the Secret Session, but all estimates made by the Aircraft Production Department of the Ministry have been substantially justified by the results. The deliveries of aeroplanes for the three months of March, April, and May, 1918, were 116 per cent. in excess of the deliveries during June, July and August, 1917, while the excess in the deliveries of engines was 105 per cent. The increase in the fighting value of the aeroplanes is very much higher than these figures would indicate, as the engines delivered during the three months just completed are of a much higher and more powerful type than those delivered during the three months of last year.

Mr. Joynson-Hicks also asked whether orders had recently been given for a particular make of machine denounced as dangerous many months ago, which was in any case obsolescent, and which could be replaced by another well-known machine, with advantage to the force and to the satisfaction of the pilot, and, if so, why had this been done?

Major Baird replies:—The value and reliability of the type of machine to which my hon. friend presumably refers have been demonstrated in the field, and it is necessary to maintain its supply until newer types can be produced in sufficient quantities.

Another question by **Mr. Joynson-Hicks** was:—How many aeroplanes are now in stock waiting for engines, and when is there any hope of engines being provided in a sufficient quantity to utilise these machines?

Major Baird states:—A considerable quantity of aeroplanes are at present in store, but it is not in the public interest to state the actual number. It is anticipated that all machines at present surplus to requirements will be fitted with engines before long.

* * *

On July 1st, **Mr. Kellaway**, answering **Mr. Joynson-Hicks**, stated that the firm of Messrs. Jonas and Colver, of Sheffield, have been supplying steel for aero-engines. There have been some complaints, but the number is not exceptional. Aero-engine alloy steels, he says, have to meet difficult and stringent specifications. They are a comparatively new product, and the usual troubles have attended the early stages of development. The Department retains at the works of the firm a technical steelmaker to advise and assist them in producing steel of the requisite qualities.

THE GERMAN AIR DESERTERS.

The "Extrablad" says two of the four German aviators deserters, Adam and Haase, while on the way from Langeland to Copenhagen for examination, told other passengers that a number of other flying machines, probably 38, left the aerodrome at Neu Ruppin at the same time as the two which arrived here, in order to escape. They did not know what had become of all the others, but suggested that some had been shot down by German guardships in the Baltic.

It is reported that all the four German aviators who landed on Danish territory have been released, as the Government has decided not to intern them. They have been charged not to communicate with any Danish-speaking person for 48 hours. They had three times attempted to escape from Germany before they finally succeeded.

[This being the case it will be interesting to know whether the Germans can demand the surrender of the deserters by a process of extradition.—Ed.]

Another report says that at the examination of the four aviators the judge ascertained that the flight had been prepared several months ago. The German aeroplanes will be handed over to the military authorities in the same manner as all other material belonging to the belligerent Powers which has entered Danish territory since the outbreak of war. One of the aviators, Professor Nicolai, has left for a watering place in Northern Zeeland.

CONGRATULATIONS.

His many friends in this country will be pleased to hear that Capt. Ernest C. Bass, who was well known in connection with the introduction of flying-boats in this country before the war, and who has since been carrying on interesting experiments in high-speed scouts, and also in aerial photography, in the United States, was married on March 18th to Miss Xenia Greville-Moore, daughter of the late Capt. Greville-Moore, 60th Rifles, and the Baroness Celestine de Montaru. All will wish Capt. and Mrs. Bass good luck and happiness in their future life.

THE MECHANIC'S VIEW.

An Air Mechanic writes:—

I have read your recent editorials on the R.A.F. with interest, and whilst agreeing with most of your criticisms think that the mechanic's point of view regarding several items might interest you.

To begin with the jacket, "High up all round collar" is the official description—surely this is not a suitable rig for a mechanic to *work* in. A coat and waistcoat, the former of which can be removed at the wearer's pleasure, and a collar which can be *washed* seems to me to be essential for cleanliness. Fancy a uniform as proposed after six months' wear!!! Oil is of a very clinging nature, and, although overalls are worn, the conditions under which we work often necessitates a coat on for warmth or protection from rain.

Next the cap—most of us find that the nearer a real cap the one at present issued (R.N.A.S. type) can be made the more convenient it is.

Promotion from the Ranks.

Why not commissioned rank for some of the most efficient mechanics? The present young officers who have charge of the repair shops, flights, etc., do not know how to get the best out of the average mechanic, besides being devoid of all skill in the use of tools themselves. Can you wonder that the men do not extend themselves to their utmost under such control?

Tool Efficiency.

The R.N.A.S. mechanics were asked to bring a full kit of joiner's tools, for which, if sufficiently large and satisfactory, an extra 3d. a day was eventually paid. This is now to be abolished, and the new Air Ministry offer to buy all tools from the men at their own price (the Air Ministry's), and asking the men to credit same to stores, and then loan out what tools they require. The state store tools are usually in is needless to describe. Men do not usually take much care of tools not belonging to themselves.

MAY RAIDS.

The following table, published on June 14th, shows the number of German towns raided by British aviators during May, together with the military objectives reached, and the number of times each town was raided:—

Place.	Military Objectives.	No. of times raided
Bensdorf	Station and sidings	2
Coblenz	Station and barracks	1
Cologne	Stations, factories, barracks ...	1
Courcelles	Stations and sidings	2
Diedenhofen (Thionville)	Station and sidings	14
Esch	Stations and sidings	1
Hagendingen	Railways and factories	1
Karlsruhe	Station and workshops	1
Karthaus	Station and bridges	3
Kreuzwald	Electric power station	4
Landau	Barracks, station, sidings, gas-works	2
Mannheim	Chemical factory	3
Metz	Stations and sidings	2
Metz-Sablon	Stations, sidings, railway triangle	15
Saarbrücken	Factories, sidings, station ...	2
Spittel	Station	1

[Considering that one of our "War Aims" is stated to be the liberation of Alsace-Lorraine it would seem more reasonable if raids on towns in those provinces were omitted from the lists of "German" towns, and were counted among raids on "occupied territory," such as Courtrai, Douai, etc. Such places as Metz, Saarbrücken (or Saarebourg) and Thionville, cannot well be at the same time German, for purposes of raids, and French for purposes of war aims.—Ed.]

A MATTER OF ADVERTISEMENTS.

In answer to various readers who from time to time complain that the advertisements of The Aeroplane are printed on the same pages as the reading matter, one would like them to know that it is done on purpose and not by accident, also that it is done in their own interests.

With usual human lack of foresight the ordinary reader in having his volume of The Aeroplane bound would like to tear out the advertisements and keep the reading matter only, whereas in the interests of history he would probably do better to throw away the reading matter and keep the advertisements only. Any reader can test this for himself by getting hold of any motor or cycling paper which is more than ten years old and trying to read it. He will inevitably find himself at the end of five minutes thoroughly bored with the reading matter, and intensely interested in the comic advertisements of the period.

Further, regarding advertisements, owing to the shortage of paper, and in order that readers who want The Aeroplane may be sure of getting it, the proprietors have decided to limit strictly the number of advertisement pages, while paper is scarce. If anyone finds difficulty in obtaining this paper after ordering the required copies, he or she is invited to write to the Editor, 166, Piccadilly, W.C.

Trade *Mark*

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The above mark indicates the BLACKBURN AIRCRAFT PRODUCTS and is a guarantee of *proved* excellence, economy and convenience.

Tools of Precision and Economy

IN the course of a long and successful experience as Aircraft Manufacturers we have devised various tools and accessories which have proved of very great value in our workshops.

WE have decided to place these goods at the disposal of our trade confreres, and they will be known under the general description of BAP meaning

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NAVAL & MILITARY AERONAUTICS



GEOFFREY WATSON

FROM THE "LONDON GAZETTE."

War Office, June 22nd.

The King has been pleased to approve of the following awards to the following officers in recognition of their gallantry and devotion to duty in the field :—

The Distinguished Service Order.

Temp. Capt. F. G. Quigley, M.C., R.F.C.

While leading an offensive patrol he attacked a very large number of enemy aeroplanes, destroyed one of them and drove another down out of control. On the following day, while on a low-flying patrol, he was attacked by several enemy scouts, one of which dived at him. He out-manœuvred this machine and fired on it at very close range. He followed it down to 500ft., firing on it, and it spiralled very steeply to the ground in a cloud of black smoke. During the three following days, while employed on low-flying work, he showed the greatest skill and determination. He fired over 3,000 rounds and dropped 30 bombs during this period, inflicting heavy casualties on enemy infantry, artillery, and transport.

Lt. (temp. Capt.) G. E. Thomson, M.C., Gen. List and R.F.C.

On one occasion, encountering a number of enemy two-seater 'planes, he dived on one of these and sent it down in flames. On returning to our lines, he dived onto another enemy machine, the observer of which was seen to collapse in his cockpit, the hostile machine going down completely out of control. On the following day, observing a hostile 'two-seater machine, he dived on it, engaging it at 100 yards' range. On the hostile 'plane going down in a slow spin, he followed it to within 2,500 ft., but was compelled to withdraw owing to heavy machine-gun fire from the ground. He has, in all, accounted for 21 enemy machines, and has at all times during recent operations displayed the most marked skill and gallantry.

A Second Bar to the Military Cross.

Temp. Sec. Lt. (temp. Capt.) A. K. Cowper, M.C., Gen. List and R.F.C.

He bombed enemy troops who were entrenching, and caused great havoc and confusion. He made repeated and determined attacks, in spite of heavy hostile fire, and eventually forced the enemy to retire from their trench. He returned to his aerodrome for more bombs and ammunition, and, going out a second time, attacked enemy troops and transport and threw them into confusion. He went out on two other occasions on the same day with equal success. Later, while co-operating with an infantry attack, he obtained four direct hits with bombs on an encampment and forced several parties of the enemy to retire from their front line. He showed magnificent dash and determination. (M.C. gazetted April 22nd, 1918; Bar to M.C. gazetted in this "Gazette.")

Temp. Lt. J. E. Hibbert, M.C., S. Lan. R. and R.F.C.

During a low-flying reconnaissance, in which he met much opposition from machine-gun and rifle fire, he attacked and destroyed enemy transport with bombs, and scattered an enemy battalion with fire from his machine-gun. Later he dropped messages on our batteries, giving them the precise location of hostile bodies and bringing back valuable information. He has by his determination and untiring energy, under adverse conditions, set a magnificent example to his squadron. (M.C. gazetted June 3rd, 1916; Bar gazetted Dec. 20th, 1914.)

A Bar to the Military Cross.

Lt. (temp. Capt.) F. E. Brown, M.C., R. Dub. Fus., Spec. Res., and R.F.C.

During an engagement between 14 of our scouts and about 40 enemy scouts he shot down two enemy machines completely out of control. On another occasion he attacked a formation of seven enemy scouts and destroyed one of them. He has destroyed two other enemy machines and driven down one other out of control. His courage and initiative have been a source of inspiration to all. (M.C. gazetted April 22nd, 1918.)

Temp. Sec. Lt. (temp. Capt.) P. W. S. Bulman, M.C., Gen. List and R.F.C.

On four successive days, when on low bombing patrol, out of a total of 16 bombs dropped on enemy troops and transport, he obtained eight direct hits and seven others within 10 yards of his objective, inflicting the most severe casualties on the enemy. Within the past fortnight he has shot down out of control two enemy 'planes and has forced two others to land. He had displayed the utmost skill and gallantry, and his courage and efficiency have afforded a splendid example to his squadron. (M.C. gazetted Feb. 4th, 1918.)

Temp. Sec. Lt. (temp. Capt.) A. K. Cowper, M.C., Gen. List and R.F.C.

Within a short period he has himself destroyed three enemy 'planes and has driven down four others completely out of control. During the recent operations he has further destroyed two hostile machines, and has attacked in the most daring manner and with the greatest effect enemy troops and transport. On all occasions his gallantry and skill have been of the highest order. (M.C. gazetted April 22nd.)

Lt. (temp. Capt.) W. R. Fish, M.C., Gen. List and R.F.C.

While leading a patrol in very bad weather he saw the enemy's infantry advancing in an attack on our trenches, which he knew were not strongly held. There were nine enemy scouts patrolling above their lines, but he led his patrol down immediately beneath them and under heavy machine-gun fire from the ground, and concentrated his fire on the advancing enemy infantry. Largely owing to his determined and courageous action, the enemy's attack was repulsed. (M.C. gazetted in this "Gazette.")

Lt. (temp. Capt.) J. Fitzmorris, M.C., Highd. L.I. and R.F.C.

During operations he carried out many reconnaissances at a low altitude and obtained valuable information. On one occasion, while on a bombing patrol, he saw an enemy machine attacking our troops with machine-gun fire from about 500ft., and at once attacked it and drove it to the ground. He then attacked seven enemy scouts, one of which he drove down in flames inside our lines. He has also destroyed five other enemy machines and driven down two others out of control. He has always set a magnificent example of dash and determination. (M.C. gazetted Sept. 26th, 1917.)

Temp. Capt. G. E. Gibbs, M.C., R.F.C.

On one occasion he bombed an enemy aerodrome from a height of 100 ft., and, descending to 20 ft., fired 200 rounds into the hangars. Later, on the same day, he engaged two enemy scouts and one two-seater machine, all three of which he drove down, the latter going down out of control from a height of 2,000 ft. On another occasion he pursued seven hostile scouts single-handed, one of which he succeeded in shooting down. He is a pilot of exceptional dash and resource. (M.C. gazetted March 26th.)

Temp. Capt. O. Horsley, M.C., Gord. Highrs. and R.F.C.

He has brought down completely out of control three hostile machines, and of two others which he engaged one he fought to within a distance of 200 ft. from the ground, forcing it to land, the second spinning down to the ground out of control, he being unable to observe it crash owing to the presence of other hostile machines. He has carried out accurate and valuable reconnaissances, and has set a magnificent example of determined gallantry and skill whilst leading low-flying and bombing patrols. (M.C. gazetted Oct. 2nd, 1916.)

Temp. Capt. J. Leacroft, M.C., Gen. List and R.F.C.

During a period of six months he has destroyed four and has brought down completely out of control six hostile machines. In all he has destroyed eight enemy machines and driven down 13 out of control. On one occasion, when leading an offensive patrol, his formation destroyed six enemy planes and drove down another out of control without suffering any damage itself. He has displayed exceptional qualities as a leader, and his patrols have always been characterised by vigour and dash. (M.C. gazetted Oct. 17th, 1917.)

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PICCADILLY, LONDON, S.W.1.

Sec. Lt. (temp. Capt.) K. M. St. C. G. Leask, M.C., Devon R. and R.F.C.

He attacked a formation of five enemy scouts, one of which he destroyed. Later he carried out a very valuable reconnaissance at a height of 100 ft. in order to locate the enemy's position. While thus engaged he observed a large column of enemy troops advancing along a road. He dived down to a height of about 30 ft., and attacked and scattered them and held up their advance for a considerable time. He has done splendid work in attacking enemy troops from a low altitude, showing great courage and determination under heavy fire. (M.C. gazetted March 26th.)

Temp. Capt. J. A. Slater, M.C., Gen. List and R.F.C.

On one occasion during the recent operations he attacked a large formation of hostile scouts, one of which he drove down in flames. Later, during the same flight, he took part in a general engagement, in which he drove down another enemy machine completely out of control. Two days later he attacked two enemy scouts, causing one of them to crash to earth. In 18 days he has engaged in 25 combats at close quarters, shooting down eight hostile machines. His great gallantry and fine offensive spirit have inspired all ranks to a very high degree. (M.C. gazetted Feb. 4th.)

Temp. Sec. Lt. (temp. Capt.) D. A. Stewart, M.C., Gen. List and R.F.C.

During the past month, when engaged with superior numbers of enemy aircraft, he has destroyed four hostile machines, all of which were seen to crash by other observers. He has in addition carried out nine successful reconnaissances, as a result of which he has returned with information of the greatest value. He has displayed the greatest courage and determination at all times on his many low-flying and bombing attacks on hostile troops and transport. (M.C. gazetted April 22nd.)

Temp. Capt. J. L. Trollope, M.C., Gen. List and R.F.C.

On one occasion during the recent operations, while on offensive patrol, he encountered three enemy machines, two of which he completely destroyed. He then attacked a scout, and after firing 100 rounds into it, the enemy machine went down completely out of control, eventually crashing. Later in the same day, on his flight encountering four enemy two-seater planes, he sent three of them down crashing to earth. Within a month previous to this he fought two hostile formations, numbering 12 machines in all, single-handed, and did not break off the engagement until he had driven off all of them towards the east. He has accounted for 14 enemy machines, and has rendered exceptionally brilliant service by his gallantry and determination. (M.C. gazetted May 13th.)

Lt. (temp. Capt.) W. L. Wells, M.C., Middx. R. and R.F.C.

He frequently attacked enemy troops and transport with bombs and machine-gun fire during operations, often flying at a very low altitude under heavy fire. While attacking enemy troops from a height of 150 ft. he was severely wounded, but succeeded in bringing his observer and machine back safely. He has destroyed five enemy machines and driven down five others out of control, and has always set an example of courage and determination to the flight which he has commanded. (M.C. gazetted May 13th.)

Capt. R. N. Wolton, M.C., R.F.A. and R.F.C.

On discovering bodies of the enemy descending from motor lorries at a certain point behind the front, he sent down a wireless call, and having used his bombs and ammunition, he landed and reported to headquarters. He then went up again, and dropped messages to several of our field batteries, with the result that heavy casualties were inflicted on the enemy. On the following day, noticing some hostile bodies crossing the bridges and failing to receive any answer from his wireless calls, he landed by the side of one of our siege batteries and personally directed the fire of the guns on to the enemy. His information has at all times been most reliable, and his work in co-operation with the artillery was of exceptional value. (M.C. gazetted March 26th.)

Temp. Capt. H. W. Woollett, M.C., R.F.C.

On one occasion, when on offensive patrol, he dived onto an enemy 'plane, which was attempting to cross our lines, and fired 100 rounds into it at 100 yards range, causing it to burst into flames and crash to the ground. He then dived onto another hostile machine, which went down in a spin and finally crashed to earth. On a later occasion he attacked and brought down in flames two enemy observation balloons. The gallantry and skill exhibited by this officer have been most inspiring to his flight. (M.C. gazetted Sept. 26th, 1917.)

Canadian Force.

Lt. F. R. McCall, M.C., Infy. and R.F.C.

Whilst engaged on photographic work he observed a hostile scout, on which he dived, and fired a burst from his machine-gun. The enemy machine went down in a steep dive out of control. On a later occasion he engaged two hostile two-seater planes, which immediately turned east. Though a steady rate of fire was kept up against him, he continued the attack, during which the observer of one of the hostile machines collapsed in the cockpit, other observers reporting that this machine crashed to earth in the enemy lines. He has always displayed the greatest gallantry and determination in carrying out his work, and has set a very high example to his squadron. (M.C. gazetted March 4th.)

Australian Imperial Force.

Capt. R. C. Phillipps, M.C., Aust. F.C., attd. R.F.C.

When engaged with hostile aircraft during the recent operations he has destroyed three enemy machines, and has in addition brought down two hostile planes out of control. He has also brought back accurate and valuable information regarding hostile movements under the most adverse conditions, particularly on one occasion, when he flew through a heavy barrage at a low altitude behind the enemy's lines. He has shown conspicuous skill and determination when escorting low-flying bombing patrols. (M.C. gazetted Feb. 4th.)

The Military Cross.

Temp. Sec. Lt. H. C. Adams, R.F.C.

Whilst on contact patrol he was attacked by seven hostile scouts, and by skilful manœuvring he enabled his observer to shoot one of them down in flames. During the same flight he was attacked by 10 hostile machines, which made repeated dives at him. He handled his machine with great coolness and skill, and finally he and his observer drove down one of the enemy machines in flames. Later while engaged in photographic work, he was attacked by a formation of 20 hostile scouts. He beat off their attacks with great skill, and enabled his observer to shoot down one of the enemy machines, which burst into flames and broke into pieces. He has shown magnificent courage and resource on many occasions.

Temp. Sec. Lt. A. A. MacD. Arnot, R.F.C.

When engaging hostile troops with bombs and machine-gun fire, he was attacked by a large number of enemy aircraft. He engaged the hostile machines in a most gallant manner, one of which he destroyed. On a previous occasion he shot down another enemy 'plane, which fell in flames. During the last four months he has carried out offensive patrols at very low altitudes under adverse weather conditions with conspicuous skill and success.

Sec. Lt. A. C. Atkey, R.F.C., Spec. Res.

When engaged on reconnaissance and bombing work, he attacked four scouts, one of which he shot down in flames. Shortly afterwards he attacked four two-seater 'planes, one of which he brought down out of control. On two previous occasions his formation was attacked by superior numbers of the enemy, three of whom in all were shot down out of control. He has shown exceptional ability and initiative on all occasions.

Lt. E. C. Batchelor, R.F.A. and R.F.C.

When attacked three times by a hostile formation and though wounded in the arm, he continued to work his gun and succeeded in shooting down two enemy machines, which vanished in the clouds spinning. An observer reported that at this time and place he saw two enemy machines burst into flames and crash to earth. By his coolness and skill on this occasion he saved his machine and pilot. On a later occasion, on seeing two hostile scouts above him, he attacked and shot down one of them, which eventually crashed to earth. His gallantry and valuable services have been most marked.

Temp. Sec. Lt. A. W. Beauchamp-Proctor, Gen. List and R.F.C.

While on offensive patrol he observed an enemy two-seater 'plane attempting to cross our lines. He engaged it and opened fire, with the result that it fell over on its side and crashed to earth. On a later occasion, when on patrol, he observed three enemy scouts attacking one of our bombing machines. He attacked one of these, and after firing 100 rounds in it, it fell over on its back and was seen to descend in that position from 5,000 ft. He then attacked another group of hostile scouts, one of which he shot down completely out of control, and another crumpled up and crashed to earth. In addition to these, he has destroyed another hostile machine, and shot down three completely out of control. He has at all times displayed the utmost dash and initiative, and as a patrol leader of great merit and resource.

Temp. Sec. Lt. W. Beaver, Gen. List and R.F.C.

During the last five months he has destroyed five hostile machines, and has brought down completely out of control six others. During the recent operations he has performed exceptionally good work in bombing and firing upon hostile troops from very low altitudes. He has displayed marked gallantry and resource, and has proved himself a patrol leader of great dash and ability.

Lt. J. M. Brisbane, R. Scots, attd R.F.C.

When on a low-flying and bombing patrol he engaged four hostile scouts, one of which he destroyed. Later, on four enemy two-seater 'planes attacking his patrol, he shot one of

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them down completely out of control. On the following day, when returning from a low bombing reconnaissance, his machine was attacked by 12 hostile scouts. He fired several hundred rounds into one of these and it was seen to crash to earth. He is a patrol leader of great dash and vigour.

Temp. Sec. Lt. D. C. M. Brooks, R.F.C.

During the recent operations he succeeded, despite the most adverse climatic conditions, in completing a long-distance reconnaissance over the enemy's lines, returning with the most valuable and important information. Previous to this he had brought down completely out of control one hostile machine. He has displayed great gallatry and determination, and has rendered services of great value.

Sec. Lt. (temp. Capt.) A. J. Brown, R. Suss. R. and R.F.C.

While on patrol work he and his patrol attacked two enemy two-seater machines, one of which was driven down out of control, the other being seriously damaged. On the following day he attacked a hostile reconnaissance machine, which he forced to land in our lines. On a later occasion he volunteered to attack a hostile aerodrome in foggy weather. He dropped four bombs from a height of 200 ft., which blew in the sides of one of the hangars, and then attacked horse and motor transport on the road, finally engaging enemy troops in the main street of a village with machine-gun fire. He has shown great skill and daring as a leader of offensive patrols.

Temp. Sec. Lt. W. H. Brown, Gen. List and R.F.C.

Whilst bombing an enemy aerodrome his squadron was attacked by a formation of 40 enemy scours. He engaged one of these, with the result that it dived straight to the ground. He was then attacked by another machine, and by skilful piloting he succeeded in firing at close range behind its tail, with the result that it fell on its back and went down out of control. Later, whilst leading a low-flying attack on enemy troops, he dropped four bombs from a very low altitude, scattering the enemy in all directions, and then at a height of 300ft. engaging them with machine-gun fire. Shortly afterwards he attacked two enemy two-seater 'planes, crashing them both to earth. In addition to these he has shot down out of control four other hostile machines, and has displayed throughout the recent operations marked gallantry and skill.

Temp. Capt. R. E. Bryson, Gen. List and R.F.C.

When on contact patrol work he was subjected to the most severe machine-gun and rifle fire from the ground, and received a serious wound. Despite this, and the most adverse weather conditions, he succeeded in locating the enemy positions, landing his machine safely behind our lines and bringing back most valuable information. By his disregard of personal danger and unfailing devotion to duty he has set a splendid example to all ranks.

Temp. Sec. Lt. J. G. Burchett, R.F.C.

During 10 days' operations he showed splendid courage and skill in carrying out reconnaissances and contact patrols at low altitudes and under heavy rifle and machine-gun fire. He obtained valuable information as to the enemy's movements, and attacked enemy troops and transport with machine-gun fire. He also bombed enemy batteries with excellent results.

Temp. Capt. R. W. Chappell, R.F.C.

He showed the greatest skill and courage in leading patrols, with the result that during four days' operations the formations which he led destroyed 19 enemy aeroplanes and drove down several others, the fate of which was not observed owing to the intensity of the fighting. He has destroyed altogether five enemy machines, and has driven down seven others out of control.

Lt. H. A. Chippindale, R.F.A., attd. R.F.C.

While carrying out a reconnaissance he and his pilot were attacked by 11 hostile scouts. They succeeded i destroying one of these, drove off the remainder, and then completed the reconnaissance. Later, when information was urgently needed during an engagement, he and his pilot carried out a most successful reconnaissance, flying at a very low altitude under continuous rifle and machine-gun fire from the ground. They located hostile batteries and enabled very effective counter battery work to be carried out, and also engaged ground targets with bombs and machine-gun fire. He showed splendid courage and skill.

Temp. Sec. Lt. P. J. Clayson, Gen. List, and R.F.C.

When on low-flying offensive patrol, he engaged an enemy scout, and shot it down, with the result that it crashed to earth. He has brought down several hostile machines, one of which he forced to land in our lines, and has engaged massed enemy troops and transport from very low altitudes with machine-gun fire, inflicting heavy casualties. He has displayed the most marked determination, courage, and skill.

Temp. Sec. Lt. E. A. Clear, Gen. List, R.F.C.

During an encounter between one of our patrols and nine enemy machines, he observed an enemy triplane, which was about to attack his patrol leader from the rear. He at once dived to the attack, firing on the enemy machine, which turned to avoid him, and collided with an enemy scout. The two enemy machines crashed to earth locked together. On the following day, during an engagement between 12 of our machines and about 30 enemy scouts, he attacked an enemy triplane which he observed beneath him. He dived after it, and following it down, eventually destroyed it. He has destroyed seven enemy machines, and has proved himself a most enterprising and courageous pilot.

Temp. Capt. J. P. Colin, Gen. List and R.F.C.

When on a special reconnaissance of enemy troops at a very low altitude, he took numerous valuable photographs, dropped bombs on a battery of artillery proceeding along a road, the majority of the horses and personnel of which were killed, and engaged with machine-gun fire massed formations of enemy infantry, causing a general stampede across the open fields. His repeated gallant efforts and consistent devotion to duty under adverse conditions have afforded a very fine example to his flight.

Lt. H. A. Cooper, Gen. List and R.F.C.

As an observer on an offensive patrol he shot down completely out of control one of the 12 machines which had attacked his patrol. On the following day, during a daylight bombing raid on a hostile aerodrome, he engaged with machine-gun fire from a low altitude hostile machines and personnel on the aerodrome. Previous to this he and his pilot voluntarily proceeded on a low-flying reconnaissance, from which they returned with most valuable and important information. He has brought down in all three enemy machines, and has at all times displayed the utmost keenness and efficiency in his work.

Temp. Sec. Lt. R. C. Crowden, Gen. List and R.F.C.

Observing a column of enemy troops marching along a road he descended to a very low altitude, bombed them, and threw the column into complete confusion. Later the same day he attacked and caused heavy casualties to enemy infantry who were advancing across country. On another occasion he attacked one of six enemy scouts and destroyed it. He showed great determination and a splendid offensive spirit.

Lt. C. R. Cuthbert, R.F.A., Spec. Res., attd. R.F.C.

While on contact patrol he and his observer, noticing the enemy massing for an attack, sent down the call to open fire, which was answered, with the result that the enemy were driven back to their trenches. This was done on two later occasions, until finally the enemy were repulsed with heavy casualties. A hostile two-seater 'plane was then attacked, with the result that the latter dived very steeply, with smoke issuing from it. His consistent gallantry and good work have proved invaluable.

Temp. Sec. Lt. H. F. Davison, R.F.C.

During four days' operations he destroyed two enemy aeroplanes and drove down two out of control, while his observer destroyed one and drove down another out of control. He also assisted other members of his squadron in destroying enemy machines. He showed splendid courage and leadership, and set an excellent example to his comrades.

Temp. Sec. Lt. J. Day, Gen. List and R.F.C.

In one night he made five consecutive raids over the enemy's lines, during which period he dropped over half a ton of bombs on his two objectives. He also, during these raids, engaged with machine-gun fire from low altitudes enemy billets in the same neighbourhood. He has rendered exceptionally valuable service, and has taken part in numerous bombing raids by night, almost all of which have been most successful.

Lt. (temp. Capt.) W. Deane, Norf. R. and R.F.C.

He attacked massed enemy troops, dropping eight bombs on them and inflicting very severe casualties. He was then attacked by four enemy machines, and severely wounded; but by displaying great endurance he succeeded in landing his machine safely at his aerodrome. His work in conjunction with the artillery and his handling of his flight have been brilliant, and by his exceptional courage and devotion to duty he has set an extremely fine example to his squadron.

Lt. R. St. J. Dix, Lond. R. and R.F.C.

While on a reconnaissance which lasted four hours he attacked enemy infantry with machine-gun fire and bombs. Though he was attacked by eight enemy scouts, one of which he shot down out of control, he obtained very valuable information. He did excellent work throughout the operations, flying at very low altitudes, and never spared himself in his determination to obtain accurate information and to inflict losses on the enemy.

Sec. Lt. (temp. Capt.) H. F. S. Drewitt, R.F.C., Spec. Res.

He, with another pilot, persistently attacked a large body of hostile cavalry, with the result that great confusion was caused, many casualties inflicted, and the horses stampeded in all directions. On a later occasion he engaged with machine-gun fire from a low altitude two hostile field batteries which

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were shelling our infantry. He has destroyed in all six enemy machines, and has brought down out of control six others. He has displayed exceptional skill and gallantry.

Temp. Sec. Lt. R. S. Durno, Gen. List and R.F.C.

When on photographic work he succeeded, despite the most constant and severe fire from the ground, in taking 46 photographs from a height of 1,300ft. On the following day he took part in a low-flying attack on hostile formations of troops, as a result of which, though his machine was riddled with bullets, he was forced to land, but succeeded in doing this behind our front line. He has set a splendid example to his flight.

Lt. (temp. Capt.) W. R. Fish, Gen. List and R.F.C.

While on reconnaissance, observing a number of enemy troops and transport on a road, he engaged these, diving on them from a height of 300ft. He was throughout subjected to the most violent machine-gun and rifle fire from the ground, but he succeeded in scattering the enemy in all directions and inflicting heavy casualties on them. He has also destroyed several enemy machines, and his personal example and determination have been of the greatest value to his squadron.

Temp. Sec. Lt. A. W. Franklyn, Gen. List and R.F.C.

On one occasion he silenced an enemy battery which had been most active, and on the following day shot down a hostile plane, which finally crashed to earth. He has on numerous occasions successfully attacked enemy aircraft on the ground, and by accurate bombing and machine-gun fire has inflicted heavy casualties on personnel and a very considerable amount of damage to matériel. His skill and gallantry have been of the highest order.

Lt. E. D. G. Galley, A.S.C. and R.F.C.

Attacking on one occasion 14 enemy scouts, he shot down one of these, which was confirmed to have crashed. On a later occasion he engaged from a low altitude a large convoy on a road, and after driving down from 800ft., fired all his ammunition into its midst. He then returned to his aerodromé for a further supply of ammunition, and again attacked transport on the same road with the most effective results. He has not only led his flight with signal success, but has on occasion led the whole squadron patrols in the most daring and efficient manner.

Temp. Sec. Lt. L. F. Goodwin, Gen. List and R.F.C.

On one occasion he flew for over two hours from a height varying from 50 to 100 feet, bombing and engaging with machine-gun fire enemy troops and transport, the while inflicting the most severe casualties on them. His keenness and dash are exceptional, and he has rendered since the commencement of the present operations the most meritorious services.

Sec. Lt. H. J. Greenwood, W. York R., attd. R.F.C.

He undertook a long-distance reconnaissance under the most adverse conditions and succeeded in returning with the most valuable information. During recent operations his work has often been carried out at extremely low altitudes, and the numerous accurate and complete reports as to hostile movements and dispositions of troops with which he has returned prove him to be a most able and determined pilot.

Lt. (temp. Capt.) H. A. Hamersley, R.F.C., Spec. Res.

On one occasion whilst leading his patrol he attacked a formation of six enemy planes. In the ensuing fight he destroyed two of these machines, one falling in flames and the second crashing to earth, and during the same engagement assisted another officer in destroying a third. In addition to these he has destroyed five hostile machines and driven down three out of control. He is a magnificent pilot, displaying at all times an utter disregard of fear.

Temp. Sec. Lt. J. L. S. Hanman, R.F.C.

While on contact patrol he and his observer, noticing the enemy massing for an attack, sent down the call to open fire, which was answered, with the result that the enemy were driven back to their trenches. This was done on two later occasions, until finally the enemy were repulsed, having suffered heavy casualties. A hostile two-seater plane was then attacked, with the result that the latter dived very steeply with smoke issuing from it. His consistent gallantry and good work have proved invaluable.

Temp. Sec. Lt. P. Hardy, Gen. List, R.F.C.

He carried out a most successful contact patrol under very adverse conditions. Though he was wounded in the foot he continued the reconnaissance and caused many casualties to enemy infantry by his machine-gun fire. He has always set a splendid example of courage and skill.

Lt. W. J. Harvey, R. Dub. Fus., Spec. Res., and R.F.C.

During one night he made five consecutive raids over the enemy's lines, during which period he dropped over half a ton weight of bombs on his four objectives. In addition he fired during these raids 1,150 rounds of ammunition from a height varying from 100ft. to 300ft. on hostile infantry and transport. He has proved himself to be a conscientiously good observer, and has performed much successful night-bombing.

Lt. B. Head, Northd. Fus. and R.F.C.

Whilst on contact patrol with his pilot he accurately located enemy dispositions from a height of 200 feet. When the machine was forced to land owing to his pilot being severely wounded, he succeeded in destroying the machine and bringing his pilot back to safety. He showed marked courage and resource.

Sec. Lt. R. S. Herring, Lond. R. and R.F.C.

He carried out a valuable reconnaissance under heavy fire from the ground, obtaining valuable information and engaging enemy troops with machine-gun fire with good effect. On another occasion, while on a photographic reconnaissance he was attacked by six enemy triplanes. He drove them all off after a hard fight and returned with his photographs. He has driven down four enemy machines out of control, and has set a splendid example of determination and resource.

Sec. Lt. F. L. Hird, R.F.C.

Observing a number of troops in a sunken road he at once attacked them, dropping four bombs, three of which fell in their midst. He then fired 750 rounds into a large body of men marching along a road. By constantly diving and firing on the enemy they were prevented from moving along the road, and suffered extremely heavy casualties. On a later occasion he again attacked a body of enemy troops, dropping two bombs among them and firing 330 rounds into them. He has by his great gallantry and skill set a fine example to his squadron.

Temp. Sec. Lt. G. L. Hobbs, R.F.C.

While carrying out a reconnaissance he and his observer were attacked by 11 hostile scouts. They succeeded in destroying one of them, drove off the remainder, and then completed the reconnaissance. Later, when information was urgently required during an engagement, he and his observer carried out a most successful reconnaissance, flying at a very low altitude under continuous rifle and machine-gun fire from the ground. They located hostile batteries and enabled very effective counter-battery work to be carried out, and also engaged ground targets with bombs and machine-gun fire. He showed splendid courage and skill.

Temp. Sec. Lt. P. K. Hobson, Gen. List and R.F.C.

Observing a large body of troops with transport he descended to within 200ft., and, despite very severe enemy rifle and machine-gun fire from the ground, dropped four bombs, three of which were direct hits, on the transport, causing severe casualties, which were increased by the accurate machine-gun fire brought to bear on his target. On a later occasion he observed a large body of troops moving across the open, and attacked these with bombs and machine-gun fire, causing many casualties and scattering them in all directions. He has been responsible for the destruction of four enemy machines, and has at all times shown a complete disregard for personal danger.

Temp. Sec. Lt. L. C. Hooton, R.F.C.

On one occasion, during a very thick mist, he and his pilot by flying very low, despite very heavy machine-gun fire, succeeded in locating the enemy's position. Though their machine was hit in all the vital parts, it was flown back to the aerodrome in safety. On a later occasion, when on contact patrol during failing light, they succeeded in locating accurately the position of the enemy. They have shown the utmost gallantry and skill during recent operations, and have carried out their duties with the greatest courage and determination.

Temp. Lt. G. O. Johnson, Gen. List and R.F.C.

Observing a large body of the enemy on a road, he descended to a low altitude and dropped four bombs, which exploded amongst them, causing the most severe casualties. He then attacked the enemy with machine-gun fire from a height of 20 ft., causing many more casualties and scattering them in all directions. On a later occasion, he secured four direct hits on a column of horse transport, and, diving down to 50 ft., by his persistent attacks held up an enemy advance for a considerable period. He has destroyed two hostile machines, has driven down two others out of control, and has always displayed the greatest courage and coolness in the most difficult situations.

Sec. Lt. W. W. Jones, Lond. R. and R.F.C.

On one occasion he attacked enemy transport, dropping eight bombs and firing 300 rounds into its midst, with the result that several limbers were completely destroyed and severe casualties inflicted on the enemy. Later in the same day, he again attacked enemy transport, causing a stampede amongst the horses and inflicting many casualties. Whilst returning to his aerodrome, he attacked with machine-gun fire two hostile batteries in action, firing 400 rounds into their midst. His pluck and determination were beyond all praise.

(*Continued on page* 65.)

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BY R. P. HEARNE.

XII.—THE BRITISH WRIGHT CO., LTD.

I wonder what state we should be in to-day if the Wright Brothers had not made a practical thing of the aeroplane?

Suppose the power-driven aeroplane not to have materialised by 1914—or suppose that, without the Wright efforts, it had only reached a very crude state when the Germans opened the war—What then?

Remember that the enemy had been at work on the Zeppelin since 1900, and try to imagine what our case would have been in 1916, 1917 and 1918 if we had had no aeroplanes to put up against the Zeppelins, and no aeroplanes to assist us in military operations.

The French with their genius for appreciating new things welcomed the aeroplane as an antidote to the Zeppelin, and undoubtedly our Allies carried forward the development of the flying machine so rapidly that it helped to stave off war for some years, and finally, as we see to-day, gave the Allies an instrument of the highest value in war. It is largely our own fault that we did not make more of this arm in 1914 and 1915.

The Pioneers.

Present-day flying men hardly realise the state of affairs which confronted the Wright Brothers when they first attempted to glide through the air, and undoubtedly these two wonderful men have not received the reward which they so well merited for their genius, their courage, and their perseverance. The critic will say that many other men built both gliding and flying machines. But facts prove that the Wrights were the first men who made these instruments practical. And so difficult was the task that success might have been indefinitely postponed but for them.



The Late Wilbur Wright and Mr. Griffith Brewer about to start at Le Mans, France, in 1908, for the first flight ever made by a British subject.

It was with great delight that I plunged into recollections of the early days of aviation when Mr. Griffith Brewer, of the British Wright Company, granted me an interview recently. I was loth in a sense to take up much of his time, for Mr. Brewer is now working literally night and day on very important tasks connected with aeronautics.

But, important and interesting as this work is, we found our conversation drifting back inevitably to the good old days when we were all new to the wonders of the gliding machine and the flying machine. I had been in correspondence with the Wrights from about the year 1903 in an endeavour to keep in touch with their work, but I did not meet them until they came to England in 1909.

Mr. Brewer, as a well-known balloonist, was also keenly interested in "the Wright legend," as some people described it, and he was ahead of me in meeting the Americans, for he went out to Le Mans in 1908 with the express object, as he puts it, of seeing for himself whether the Wrights could fly or not.

The First Britisher to Fly.

Their first meeting deserves detailing, for it throws a strong light on Wilbur Wright, whose quaint and engaging personality has never been fully analysed.

When Mr. Brewer came upon the flying ground Wilbur was on the machine, surrounded by the usual group of foolish and eager questioners. Mr. Brewer sat down some distance away, sent his card to Wilbur, and went on with his smoking as if he were witnessing an every-day affair.

The American nodded to him, and the Britisher did not stir. He did not want to interrupt Wright in his work.

Wilbur Wright, though busy with his machine and his crowd of interrupters, must have understood and appreciated Mr. Brewer's tact, for eventually when they came together a bond of sympathy was quickly established. They fell to talking of American and European customs and habits. In fact they talked of everything but aviation! This tact on the part of the Englishman must have won Wilbur's heart, and anyone who saw how the Americans were pestered at the time by impertinent, curious and stupid people will not wonder at it.

To mark his appreciation the pioneer flying man suddenly invited Mr. Brewer to take an aerial trip with him, and in this wise the first Britisher made his first flight in a power-driven aeroplane.

An Enduring Friendship.

As the incident is historic I have given it in some detail, I can add that Mr. Brewer well deserved the honour conferred on him. A strong friendship sprang up between the Wrights and Mr. Brewer, and the Americans could have had no more faithful or devoted ally. He helped them to overcome the strangeness of their position, and he did much to save them from the annoyances and impositions which were attempted against them by presumptuous and unscrupulous people.

The innocence and the simplicity of the Wrights were not easy to understand at the time, and after the lapse of years it is well nigh impossible to convey their character to the modern reader.

The Wrights were like recluses who had built an aeroplane in a monastery and suddenly brought it before a strange and unbelieving world. At the time they made their first reported flights in France there were "aeronautical experts" and scientific men

in this country proving by the most elaborate calculations that the Wright machine could not possibly fly!

People doubted the newspaper reports, and when some of the doubters went to France and saw the machine actually rise in the air they still had a suspicion that it was some Yankee delusion or fake.

On American Business Methods.

In many respects the Wrights were wholly unfitted for the work of introducing the aeroplane. They were utterly devoid of bombast or pushfulness; they disliked any kind of notoriety or flattery, and they had no business or commercial instincts. The way they were imposed upon, tricked and defrauded in subsequent years forms a most melancholy chapter which Mr. Brewer alone could fully write. I know a good deal of it, but the affair leaves such a nasty taste that I have no relish for setting it forth now.

But for Mr. Brewer I think that the poor Wrights would have been torn to pieces by the wolves, vultures, showmen, sharks and scoundrels who sought to exploit them and their inventions. The Brothers were the most un-American Americans I have ever met as regards business matters; and as straight, trustful men they were simply lost in the battle with the worldlings.

Straight Trade.

Fortunately, Mr. Brewer became their British representative, and he brought out another honest man, the late Horace Short, to take up the building of British Wright machines. In 1909 the first six British Wright machines—and the last—were turned out by Messrs. Short Bros., who became the pioneer aeroplane makers in this country.

The ownership of the six British Wright machines is of historic interest. They were the late the Hon. C. S. Rolls (two); the Hon. Maurice Egerton, and Messrs. Ogilvie, McClean and the late Cecil Grace. Every one of these men did grand work, and two of them, Rolls and Grace, gave their lives to the cause.

The Patent Question.

It is too long a story to tell all the subsequent developments of the Wright machines and the Wright patents in England, France, and Germany. The fight over the Wright patents and the history of the various companies take a great deal of space to set it out properly, though I hope that some day Mr. Brewer will give us a monograph on the subject, illuminated by his gentle yet caustic wit. It will be a scathing revelation of modern commercial morality.

To sum the matter up, the Wrights got very little out of their epoch-making inventions, and in money, their life, long labours and sacrifices were shamefully recompensed. Fortunately they were men who set little value on money, and they had no idea of creating trusts and monopolies. After fighting to get their rights recognised, they presented the patent rights to the British Government.

The British End of The Business.

To-day we have a British Wright Co., but it has very little to do with the original Wright work. It is in effect a new development of Mr. Brewer's activity.

Scientific instruments of various types are produced and Mr. Brewer in many ways is rendering splendid service to the country, but in so unassuming a manner that very few people know of it.

Highly interesting though this work is, I found that Mr. Brewer would again and again drift away from it to talk of the Wrights, and as this theme is intensely fascinating to me also I could not resist hearing more about them from their greatest friend.

One's youngest reader knows of course that Wilbur Wright is dead. Orville is still active and doing excellent work to help on American aviation, where through some extraordinary mischance the science had been shockingly neglected until war broke out.

As deeply religious men, of almost idealistic humaneness, it was one of the griefs of the Wrights years ago that their invention was being mainly taken up for war purposes. But Orville Wright to-day in realising the justice of the Allied cause is giving his aid, unreservedly, and if Wilbur were alive now I am sure that he would be assisting with all his might to crush the German menace to civilisation.

The success of the Allies in the air is in effect a tribute to his memory, and the fine chivalry of our pilots is in excellent keeping with the noble character of the two men who gave us flying machines.

The Wilbur Wright Memorial Lecture.

The Sixth "Wilbur Wright" lecture was given at the Central Hall, Westminster, on Tuesday, June 25th, at 7.30. The lecture which has now been given for six years is provided out of an endowment raised in memory of the late Mr. Wilbur Wright, the pioneer of the modern aeroplane, the fund for which is administered by the Aeronautical Society of Great Britain.

On the present occasion the lecture, which was entitled "Some Outstanding Problems in Aeronautics," was delivered by Dr. W. F. Durand, the Scientific Attaché to the American Embassy at Paris and Chairman of the United States National Advisory Committee for Aeronautics. The Chair was taken by Sir William Weir, Secretary of State for the Air Ministry.

Among those present were Major-General R. M. Ruck, C.B., C.M.G., R.E. (Chairman, Aeronautical Society); Sir Horace Darwin (Chairman, Air Inventions Committee); Major Baird (Parliamentary Secretary for the Air Ministry), the French Ambassador, the Italian Ambassador, the Secretary to the American Embassy, the High Commissioner for Canada, the High Commissioner for South Africa, the High Commissioner for New Zealand, Mr. F. Handley Page, Mr. W. Barnard Faraday (Secretary, Aeronautical Society of Great Britain), Col. Sir F. Hall, Mr. Joynson-Hicks, M.P. (Chairman of the Parliamentary Air Committee), Mr. H. White Smith (Chairman of the Society of British Aircraft Constructors), Lord Ferrers, Col. J. Ward, M.P., Sir Herbert Nield, M.P., Mr. Griffith Brewer, Mr. A. E. Berriman, Lt.-Col. M. O'Gorman, Mr. Noel Smith, Mr. G. Holt Thomas, the Rt. Hon. H. A. L. Fisher, M.P., Sir Fortescue Flannery, M.P., the Chinese Minister, General Colvin, M.P., Lord Cottesloe, the Presidents of the Institution of Civil Electrical and Mechanical Engineers, the President of the Institution of Naval Architects, General Ellington, Lieut.-General Sir David Henderson, Admiral Sir G. M. Paine, Lord Balfour of Burleigh, the Belgian Minister, Sir Herbert Austin, Lord Aberconway, Lord D'Abernon, the Columbian Minister, Mr. G. Holt Thomas, Sir Napier Shaw, Sir R. T. Glazebrook, Brig.-General Alexander, Sir Arthur Duckham, Lord Montagu of Beaulieu, Lord Foley, Major-General F. H. Sykes, the Chilian Minister, Sir James Frazer, the Rt. Hon. William Brace, M.P., the Japanese Ambassador, Lord Saltoun, Lord Russell, Lord Muir Mackenzie, Brig.-General S. M. Maitland, Sir David Paine, C.I.E., Mr. J. W. Gulland, Mr. Clement Edwards, M.P., Sir Henry Norman, M.P., Sir Shirley Murphy, Lord Erskine, Sir Alex Kennedy, Mr. L. Haslem, M.P.

Major-General Ruck, the Chairman of the Society, formally welcomed Sir William Weir and assured him what very great pleasure it gave to the Council and members of the Society to see him occupying the Chair that night.

Sir William Weir's Introductory Remarks.

The Chairman said that in many ways it was a rare and genuine honour to preside at the meeting.

Firstly, because of his interest in everything connected with the problems of the air—an interest founded not only on his own personal tastes and inclinations, but stimulated by the office with which he was associated.

Secondly, it was a privilege for all of them to pay homage by their presence to the memory of a very great American citizen and of a very great pioneer in flying—Wilbur Wright. Wilbur Wright now took his place on the roll of fame along with Fulton, Stephenson, and Bell, as one of those whose discoveries has marked a milestone in the progress of the science of transport in one or other of the three elements.

A third reason why he was glad to be there was that it enabled him to express that recognition which he felt to be due, if not overdue, to the work of the Aeronautical Society. The Society was by far the oldest aeronautical society in the world. It was founded as far back as the year 1866 and had had to struggle against many vicissitudes and a considerable degree of ridicule before it had reached its present honourable and successful position.

Before the war the Society had made every effort to awaken public opinion to the importance of flying, both to the Army and to the Navy, and he could say now, from his own personal experience and knowledge, that during the war the members of the Society had endeavoured in every way, and most successfully, to help the Government in developing the progress and strengthening the efficiency of the Air Forces.

It was with peculiar pleasure that, with the gracious permission of the King, he was able to announce that His Majesty had been pleased to allow the Society to be known in the future as the Royal Aeronautical Society. (Applause.)

The Royal Aeronautical Society.

His Majesty had thus given a striking recognition of the importance of the work which the Society had performed, and which he trusted it would continue to perform in the interests of the nation.

The Home Secretary had asked him to hand over to their Chairman the following letter:—

"To Major General Ruck. I am directed by the Secretary of State to inform you that he has had the honour to lay before the King your application, transmitted to this Department, through Major Baird, for permission to use the prefix 'Royal' in the name of the Aeronautical Society, and that His Majesty has been graciously pleased to command that the Society shall henceforth be known as The Royal Aeronautical Society."

Our Ally.

He was sure they would all unite in welcoming the lecturer of the evening, Dr. Durand, as representative of our great Ally, the United States of America. Dr. Durand was the Chairman of the American Advisory Committee for Aeronautics, a body which had played a very great part in the development of aero-



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nautical construction in the United States during the war. His great qualifications as a scientist were well known to all of them, and it was unnecessary for him to enlarge upon them, or to intervene in any way between the audience and his lecture.

At the same time, they would perhaps pardon a single personal note. His first association with Dr. Durand was one of which he (Dr. Durand) was not perhaps himself aware. He remembered very well as a schoolboy writing down from his father's dictation a paper on an engineering subject for a very large engineering congress held in Chicago, he believed in 1896, and addressing that paper to Dr. Durand, who was secretary and editor to the Congress. He desired, on their behalf, to offer their most cordial welcome to Dr. Durand, and to invite him now to give them his lecture on "Some Outstanding Problems in Aeronautics."

Dr. W. F. Durand then delivered the following lecture:—

THE LECTURE.

Dr. Durand commenced his lecture by commenting upon the extraordinary rapid development of the aeroplane during the past ten years. He pointed out that no other achievement of man had called so largely upon scientific research in the solution of the many problems involved. There were still many problems on one's hands, and others the significance of which was yet hardly appreciated.

A review of the problems to be faced was therefore interesting.

The Problem of Constructive Materials.

One could not find a better illustration of the interdependence of technical and scientific research than that which had made the present-day aeroplane a structural possibility.

The modern aeroplane comprised a body, wings, a prime mover and an airscrew, involving a wide range of constructive materials.

The aeroplane proper required three distinct classes of structural elements: those intended to give form, strength and coherence to the structure, various secondary elements to bind the principal members together, and to secure homogeneity of construction and the surface covering for the body and wings.

Broadly speaking the fundamental problem in aeroplane construction was adequate strength on minimum weight. For the main elements of the structure wood had so far taken the lead, although metal construction was attracting increasing attention.

Knowing this, one must always strive for an improved combination of elements of construction in future designs, and the questions which must always be regarded were:

(a) What materials are best suited to the purpose in view?

(b) What disposition shall be made of the materials adopted?

For instance, if wood was to be used in a fuselage, one had to consider its distribution between the main longitudinal elements, the intermediate elements and the outer covering, especially if of plywood. What aeroplane designer could claim to have attained finality concerning this one example?

Less finality existed regarding the application of metal construction, metal and wood construction, especially remembering the new light alloys and the astonishing characteristics of the new alloy steels.

With metal construction all needs could be met except perhaps the effects of shock, vibration, etc. In future designing one must consider the interrelation of the different components and the distribution of the different materials.

The final research aimed at an *optimum optimorum*; for the best possible material and for the best possible design using such material.

The Problem of Size.

Another interesting problem was the limiting size and carrying capacity of aeroplanes, its nature and its extension or removal.

The laws of similitude of geometrically similar structures were involved. Geometrically similar structures of wing and fuselage would have similar factors of safety under equal unit loads, but such structures increased in weight as the cubes of similar dimensions.

If this law actually applied a point would soon be reached in the increase of the size of an aeroplane when the supporting force would fail to lift the weight of the structure.

One could escape from the consequences of this law because it was unnecessary for a large element in an aeroplane—say a wing—to be geometrically similar to a small one. Structural variations were possible.

Also it was unnecessary that a large aeroplane should be in its general form a geometrical copy of a small one. For example, lifting units might be multiplied.

There were three problems involved: so to design aeroplane units that overall weight should not increase sensibly faster than as the square of the dimensions; to combine the larger units in such a way that wings, fuselages, engine nacelles, etc., needed the minimum weight of secondary structure; and to arrange multiple wing elements in such a manner as to reduce to a minimum interference with one another.

The lecturer felt that there were no overwhelming difficulties in the designing of aeroplanes to any limit, and cited the steamship as an example of applying these principles.

Variable Wings.

Another problem was to enable an aeroplane to vary its wing area in accordance with the circumstances of flight. A relatively large wing surface was necessary in starting and landing at a moderate speed. For the attainment of high speeds reduced areas were needed.

To some extent the same ends might be met by varying the camber.

Motive Power (Fuel).

The problem of the fuel supply needed careful study, because the natural deposits of petroleum oil were not inexhaustible, and this factor must not be overlooked in the trend of design for the ultimate prime mover to be evolved.

For present purposes the various grades of hydro-carbon fuel should be studied with relation to their effects on the motors. There was little to choose between the grades from the point of view of economy.

System of Application.

The gross power possible needed investigation, a problem which resolved itself into three subsidiary questions: how much power for a single cylinder, how many cylinders for a single engine; how many engines for a single airship.

The lecturer expressed his belief that nearly 40-h.p. per cylinder had been attained.

The 12-cylinder engine was now common, and 16 and 18 cylinders represented questions of detail.

Three or four engines on a single aeroplane was current practice and 2,500-h.p. on a single structure could now be realised.

Dr. Durand thought that power could only be increased past 600-h.p. by the multiplication of cylinders and that a 2,000-h.p. engine would necessarily need 40 to 60 cylinders, chiefly because of cooling limitations in a big cylinder.

The Carburettor.

The aero engine carburettor had taken its initial form from the automobile carburettor. The variation in the atmospheric pressure under which an aeroplane had to work introduced an important difference.

Progress with this problem had been made by laboratory research, checked by experience in the air, but the present solution could not be considered as final, and a restudy of the position in the light of experience gained during the past three or four years should be undertaken.

Ignition.

Although the best present-day ignition systems were effective, they were so complicated and specialised as to demand investigation as so many modes of derangement were possible and a more simple mode of initiating combustion in the cylinders should be found. It seemed almost certain that some potential combination of physical and chemical factors existed which would permit of eliminating complexity.

Maintenance of Power at Altitude.

The problem of preserving maximum power at varying altitudes was difficult of solution. Broadly speaking, the power developed by a cylinder was governed by the weight of fuel which could be burned per cycle. The oxygen varied according to the amount of air drawn in, which diminished progressively with increasing altitudes. An aero engine at 15,000 feet could only draw in 60 per cent. of the air available at sea level, and it, therefore, only could produce 60 per cent. of the power. The resistance of the air on the machine would also diminish to 60 per cent.; but, unfortunately, the weight remained constant, and the lifting force available at that altitude would no longer support the machine at that speed.

Increased speed by increased engine power was difficult to effect economically. An alternative was to increase the angle of attack of the wings, but a corresponding increase in head resistance presented a new difficulty, and progress could not be effected until the angle of attack was still further increased until the resulting upward pull of the airscrew overcame the head resistance of the wings, and horizontal flight once more became possible at a still slower speed. Consequently, an aeroplane normally lost horizontal speed as it ascended to higher altitudes.

The two courses open were to design the engine to give a certain desired performance at 15,000 or 20,000 feet, with a cylinder volume suited to the rarified air in which the engine was to work, or by designing an engine for operation at sea level and equipping it with a supplementary device intended to maintain sea level conditions within the engine at all altitudes.

In the first case the engine would have too big a piston displacement when low down, and operation near the ground on an altitude adjustment would be out of the question as the machine would be overpowered.

It would be necessary substantially to reproduce altitude conditions by throttling down the air supply at the intake.

The second solution would call for a compressor to raise the rarefied air up to normal low altitude density.

Both forms involved extra weight, but military exigencies made it impossible for Dr. Durand to state the present position regarding the solution of the difficulties.

The Airscrew.

The lecturer thought the improvement of the airscrew a difficult problem as its working depended not only on its relation to

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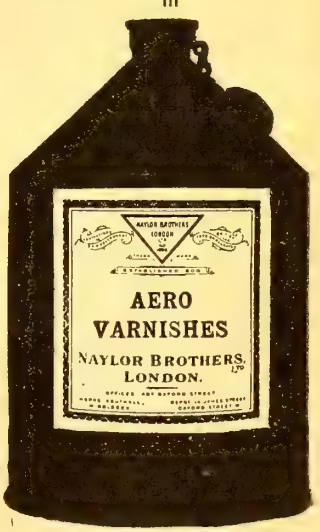
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the engine, but also with the aeroplane, and according to the varying circumstances under which it had to function.

Dr. Durand then proceeded to discuss at considerable length the various mathematical and empirical researches which had been made into airscrew design and called for investigation regarding the reactions which exist between airscrews and the aeroplane, the use of multiple airscrews on one shaft, and finally the employment of airscrews with an adjustable pitch.

The last problem was very important because the following elements all were involved in the work of an airscrew: weight of the machine; surface of wings and their aerodynamic characteristics; angle of attack of wings; speed; power developed by the engine; revolutions of the airscrew; area and form of blades of the airscrew; and its pitch.

The various factors reacted on one another in a very complex manner, and the efficiency of the airscrew under changing conditions could be improved if its pitch could be altered at the will of the pilot.

Stability and Control.

A great deal was known concerning stability and its relation to control and the question of most importance was to determine where control was to end and stability to commence so that the machine should ride easily. It was generally recognised that the two factors could not be utilised fully side by side. Where manœuvrability was necessary in a military machine stability must give place to controllability. For commercial and pleasure purposes the reverse was desirable.

A problem deserving of investigation was the changing of function of elevators and rudders respectively, according to change in the altitude of an aeroplane. Some discovery might be made in the better arrangement of the control units, or in the mechanism whereby the pilot operated them, which would eliminate the possibility of confusion when the machine was in an abnormal altitude.

Armament and Instruments.

Large and important fields could be found for research concerning armament and instruments. Little could be said in public of the former. As regards the latter there were some 25 or 30 instruments which can find place on an aeroplane most of which were capable of improvement.

In conclusion the lecturer pointed to the need for the study of the best manner in which the existing enormous investment in aeronautic production could be adopted to the requirements of peace conditions.

The Vote of Thanks.

Sir William Weir, in moving a vote of thanks to the lecturer, said that Dr. Durand had dealt in his most admirable paper with the main problems which now confronted the designer and the constructor of aeroplanes. The clearly reasoned exposition which he had given of modern tendencies together with difficulties in designing, and the suggestions which he had made for the solution of the latter, would no doubt be carefully studied by all the technical members of the Society, and all those now engaged on the application of aeronautical science to manufacture.

But as he had listened to the paper, he had formed this impression very clearly—that if it were possible for all the designers, and all those interested in aeronautical problems whom he saw in that hall, to discuss the paper fully and freely, apart from the limitation of war exigencies, what a revelation it would form of the progress made in the last three years! He desired, if he might, in that connection to pay a very much merited tribute to the skill, the ingenuity and the technical capacity of the aircraft designers of Great Britain.

Without going back to the early days of recrimination, which he understood was characteristic of all discussion involving the Royal Aircraft Factory, for example—he wished to point out that the work done there had laid the firm and solid basis for design on which most of to-day's best work was founded. No one realised that more clearly than the present trade designers. But the new policy of entrusting design—pure design—to the industry itself had been, he thought, very successful, and the country owed a very deep debt of gratitude to those firms who were devoting so much study and skill to the development of our designs. And in saying this he would refer even more particularly to those pioneer firms who had worked for so many years without any particular prospect of reward in any shape or form.

While the exigencies of war-time prevented the publication of record of technical progress, he would say that great as had been the progress in the last three years of war, the past year had marked an even greater advance. The rate of advance was being accelerated. The scientists, the designers, the engineers of this country had played an outstanding part in that progress, and their combined achievement was one that they might very well be proud of. He thought he could define our technical position in relation to that of the enemy by saying that our technical superiority at the present time was measured—was equalled—by the superiority in the human qualities of skill, enterprise, and endurance displayed by our pilots.

Evidence From the Front.

In that connection it might perhaps interest them to hear a report which he had received last night from General Salmond regarding a pilot, a Squadron Commander, who had been taken away from the Front for other duties at home. He had not been particularly pleased at being withdrawn from France, and this was the record of his morning's work before he left:—

> "Major —— left the aerodrome at 9.40 p.m. when the rain had ceased for a time. He met five Pfalz scouts and a two-seater east of Plugsteerte at 9.58 p.m. He shot down two of the scouts, which crashed definitely, chased two more so that they collided and both broke up and crashed. He then attacked the two-seater, and shot it down in flames. The fifth scout escaped. He then returned to the aerodrome and left for England at 11 o'clock in the morning."

He had given them what he believed to be a clear and true indication of the technical position at the present time, but it must not be forgotten that progress and development were so rapid that they would never be content with their existing state, or place undue confidence in the results of their own future efforts. But to-day they had the solid foundation of the full and whole-hearted co-operation of the United States upon which to rest their trust for the future.

America's Task.

In this bitter struggle—which they had firmly believed from the beginning to be in defence of the very foundations of our civilisation, apart from the great material advantages she could afford—the knowledge that the United States was united with us in sympathy and faith had stimulated and heartened us from the day that she had declared war. Since then we had watched with ever-growing admiration and gratitude the mobilisation of her very large resources, with the skill and energy which were the concomitant of American enterprise.

In every field of warfare we were receiving her whole-hearted assistance. In the field of air warfare, the assistance which America had already rendered to us in the way of personnel was very great. The records of her pilots had already appeared in the Press and he might say that the American officers and men who were now being trained, both in this country and in France, had won golden opinions from all with whom they had come in contact. The universal opinion was that no praise could be too great for their energy and their capacity, for their willingness to learn, their desire to co-operate in everything. Therefore, so far as men were concerned, they could have the fullest confidence in the future success of the American Air Force.

With regard to material, he thought they might now begin to speak with equal confidence. The tests which had recently been applied, in France and this country—very thorough and searching tests—to the Liberty engine, justified, he hoped, the prediction that it would prove a most valuable contribution to the Allied resources and that the United States could go ahead and push these productions with every confidence. The results of the experience so far obtained placed the engine in the very first line of high-powered aero-motors.

It was well understood, he believed, that some criticism should be directed against the slow rate of production of these motors during the last three or four months. But he would like to point out that a considerable interval must, and always would, exist between the experimental and the commercial production of any new aero-motor. No engine, even of the best design, and in the country with the greatest resources and facilities, could escape the period of what was called "teething trouble" before the motor was anything like fit for use in the field on any large scale. The Liberty engine, accordingly, was an example of what the Allies expect in the matter of aircraft production from the scientists and designers of America, of whom Mr. Durand stood there among them as representative

The Users of Aircraft.

The various methods of the utilisation of aircraft in warfare were growing very rapidly—so rapidly that it was now perfectly clear that even with all the help America could give, the fullest demand which could be made to fulfil all the different functions for which aircraft were suitable in war-time could never be met in this war. More aircraft, with their men and personnel, would always be required than could possibly be supplied—the functions were growing so rapidly. To achieve the best allocation would involve a policy of concentration, and in this the Allies were counting on all help in machines and men that the United States could give.

Dr. Durand, by his lecture, had himself shown cause for placing every trust in the intellectual capacity and technical skill of the men upon whom America depended for the development of her aircraft. He knew that he was expressing the wish of all present in moving a very hearty vote of thanks indeed to Dr. Durand for the honour which he had done the Royal Aeronautical Society in delivering before it so important and so illuminating an address.

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Returning Thanks.

Dr. Durand, in acknowledging the vote of thanks, said that with regard to the co-operation of the United States in the great enterprise in which, with the Allies, they were now engaged, he wished to assure them so far as it was in his power to speak for the aeronautical interests of the United States, and so far as he might dare to speak for the United States in a broader way, they were in this enterprise heart and soul, and to the last fibre of their being. And if, thus far, their contributions had not come up to their hopes and aspirations, he believed they were learning rapidly and that the time of probation was drawing to a close, and that they might in the end be able so to quit themselves as to merit perhaps some meed of approval from England, the great Mother Country.

Thanks to Sir William Weir.

Lord Montagu of Beaulieu then moved a vote of thanks to Sir William Weir for presiding. Sir William had made his mark, he said, when he entered the service of his country as Director-General of Aircraft Production. He felt quite certain that he would make an equally creditable record in his new function as Secretary of State to the Royal Air Force. Sir William had been subjected to a little criticism of late by reason of the fact that since becoming Secretary of State he had not been represented in either House of Parliament. In the House of Lords they knew a good thing when they saw it, and it had now been arranged that Sir William Weir should take his place in that House without passing through that quite inferior sphere, the House of Commons.

He could confidently assure him of a very hearty welcome, because the House of Lords always appreciated a man who knew his job. The great honour which His Majesty had conferred upon the Society through the medium of Sir William Weir would not only add lustre to its name, but would give it a status which would be very valuable both to the Society and its members and to the scientific work which they carried on. He hoped Sir William would accept the thanks of the Society, and would transmit those thanks to the proper quarter.

For the Aircraft Industry.

Mr. White Smith briefly seconded the vote of thanks. Speaking for the Aircraft Industry, he wished to thank Sir William for his appreciative remarks regarding the designers and constructors of this country. It was a great reward to the pioneers of the Aircraft Industry and also to those who had come into the Industry since the beginning of the war, to know that their work had been so valuable in this great war, and that the present Air Minister had, from his personal knowledge, so high an appreciation of that work.

As aircraft constructors they had come constantly into touch with Sir William Weir when he was Director-General of Aircraft Production, and had then learnt to appreciate his broad-minded vision and his mastery of detail. He was sure that he would continue to exhibit the same qualities in his present high office, and bring the same energy to bear as head of the Royal Air Force; and they wished him every success in his great work of smashing the Germans in the air and through the air.

The vote of thanks having been heartily accorded,

Sir William Weir briefly acknowledged the compliment, saying that he took their reception of Lord Montagu's and Mr. White Smith's remarks as an encouragement to him to develop the Force of which he was proud, and of which he hoped to be still prouder.

A U.S. MOVE.

Mr. K. B. MacDonald, formerly of Buffalo, has been commissioned lieutenant commander U.S. Navy and is in charge of the Naval aircraft factory at the League Island Yard, Philadelphia. Mr. MacDonald, while he lived in Buffalo, was vice-president and general manager of the Curtiss Aeroplane Company. He is a former vice-president and director of the Curtiss Aeroplane and Motor Corporation.

Since last September, Mr. MacDonald has been in Garden City, Long Island, where is the aeronautical research laboratory and workshop of the Curtiss Engineering Corporation. He is one of the pioneer production men in the aviation industry.

THE INDUSTRIAL RECONSTRUCTION COUNCIL.

The propaganda work on behalf of self-government for Industry, which the Industrial Reconstruction Council is specially formed to undertake, is developing at a rapid rate. Following on the success of the Inaugural Meeting at the Guildhall, a national campaign has been planned and meetings are already arranged under the Lord Provost of Edinburgh, and the Lord Mayors of Manchester, Birmingham, Sheffield, Norwich and Nottingham.

In Manchester, Mr. G. H. Roberts, the Minister of Labour, and Sir William McCormick, Chairman of the Industrial and Scientific Research Department, will be the leading speakers. In Edinburgh and Birmingham, Dr. Addison will again speak under the auspices of the I.R.C.

Sir Charles Allom and Mr. Wilfrid Hill, a member of the Whitley Committee, have recently been added to the Executive.

The Council's explanatory pamphlet on "Trade Parliaments," which is the fullest explanation yet published of the Whitley Report, has, it is announced, run into the third edition, and the demand is still greater than the supply.

Negotiations are now proceeding for the establishment of local branches of the Council in all the leading industrial centres, and those who are interested in this important work, and are prepared to assist, will be welcomed by the Committee. The address of the Secretary is 8, Bouverie Street, E.C.4.

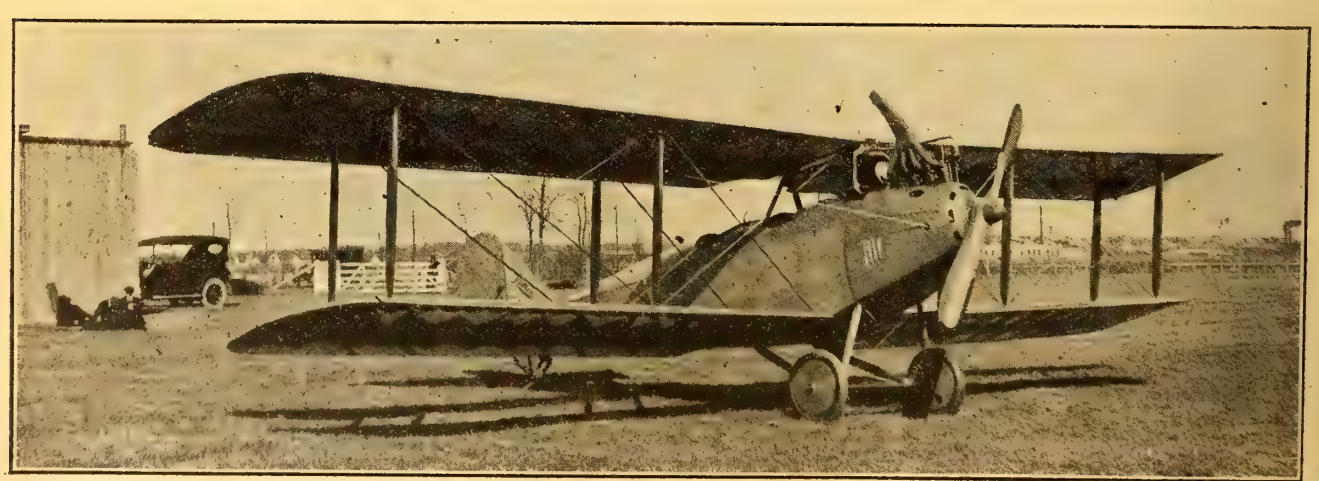
A LAWSON AEROPLANE.

The Lawson Aircraft Corporation of Green Bay, Wisconsin, U.S.A., has produced a two-seater dual-control aeroplane known as the M,T.2, which is built for training purposes, and also, according to the constructors, for reconnaissance. This machine seems a distinctly handsome effort and one of the best types of its kind of which particulars are available from the United States.

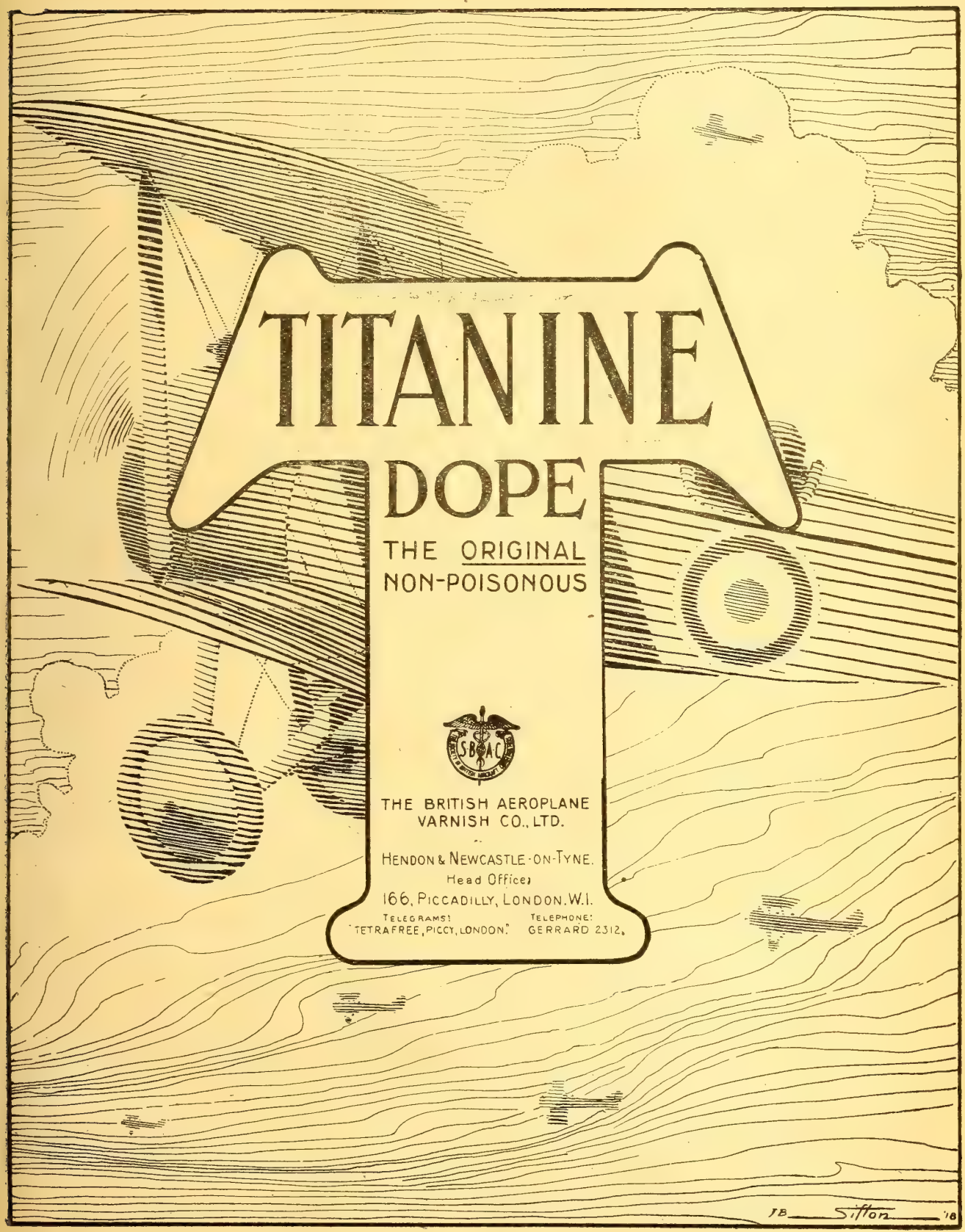
Considerable care seems to have been taken to reduce head resistance, and a high state of efficiency is indicated. The main points of the machine are as follows:—

Span upper plane, 39ft.; span lower plane, 36ft.; chord, 5ft. 2in.; gap, 5ft. 1in.; stagger, 8in.; area (upper plane including ailerons), 200 sq. ft.; area (lower plane), 150 sq. ft.; length overall, 25ft.; height overall, 8ft.; weight (empty), 1,200lbs.; weight (loaded), 1,900lbs.; speed range, 42-90 m.p.h.; climb in 10 mins., 6,000ft.; gliding angle (full load), 1 in 9; motor, Hall-Scott, 100-h.p.

The makers state that the M.T.2 exceeds all their expectations, and that they believe it will outclass in performance any other machines of equal horse-power in the world. Accepting the figures produced by the constructors, one would not like to endorse this statement because various two-seater aeroplanes of 100-h.p. show very remarkable performances. Nevertheless the Lawson Corporation may feel encouraged to further efforts.



The 100-h.p. Lawson biplane, an American advanced instructional machine.

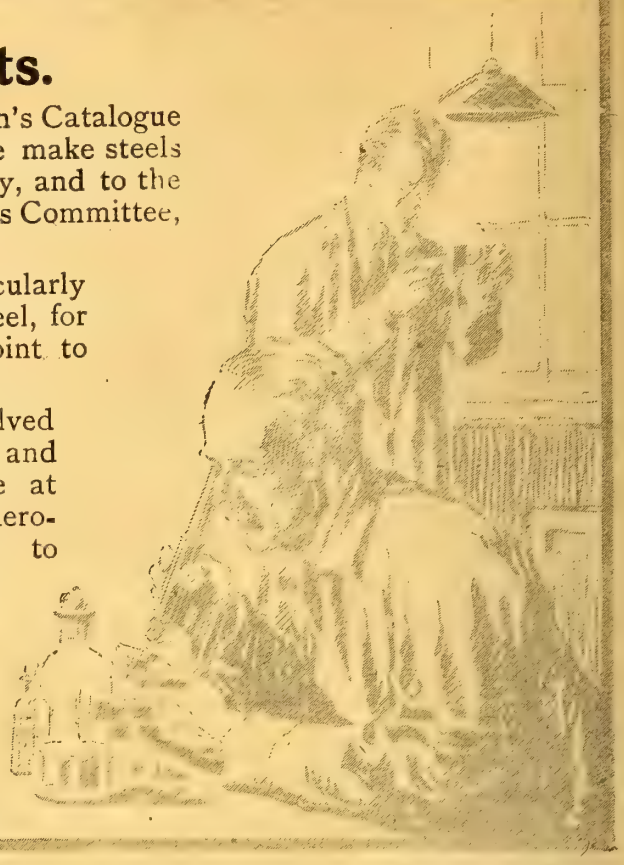

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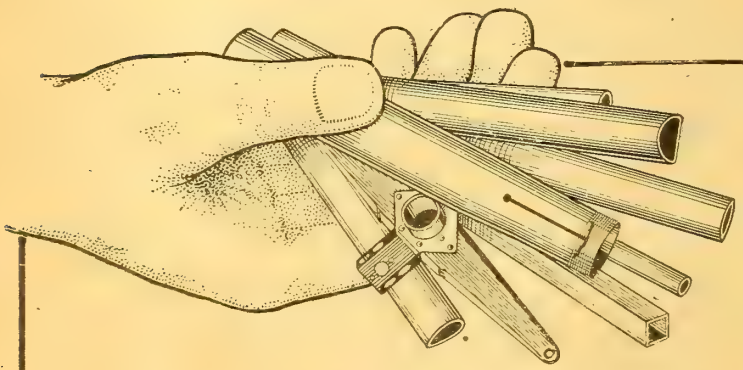
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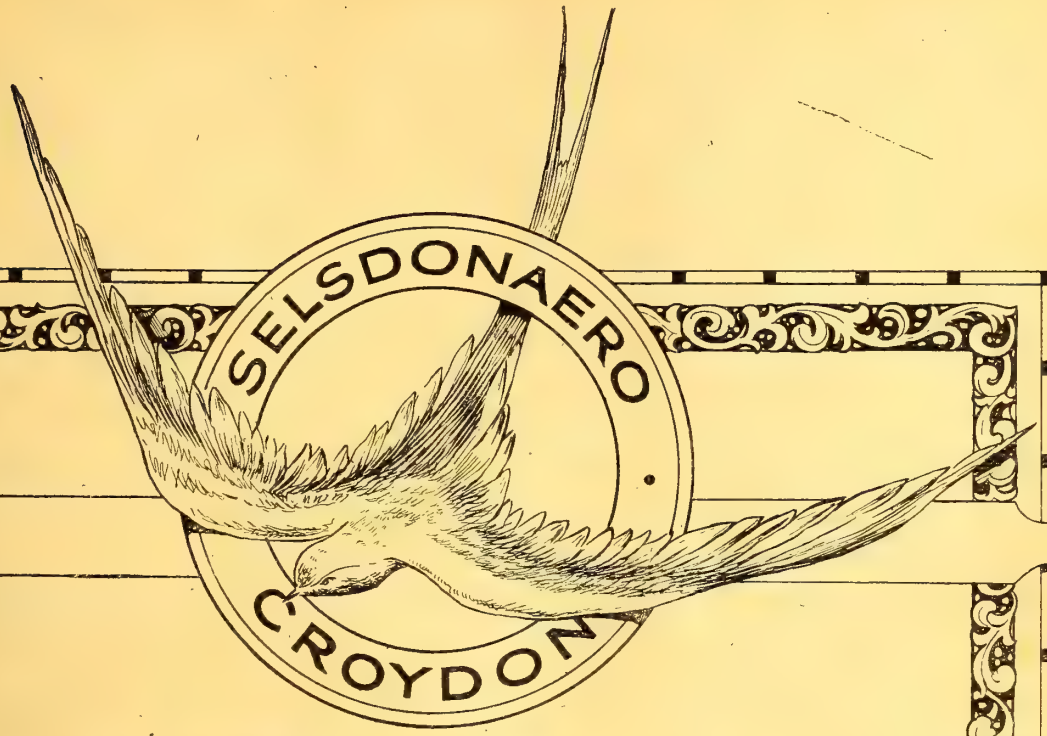
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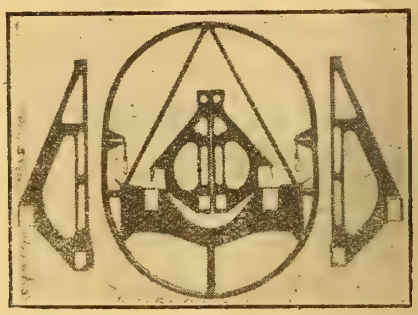
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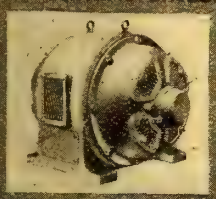
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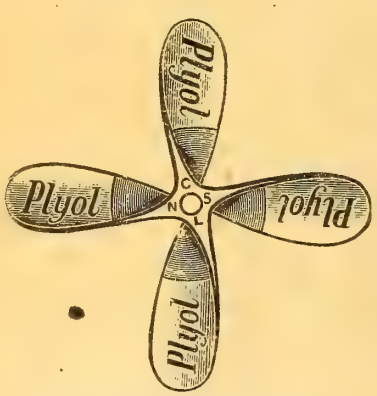
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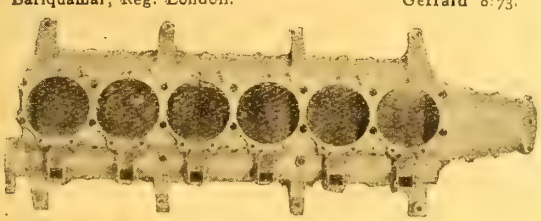
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Galvanising—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

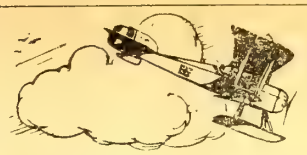
Gauges—

J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17

Gears—

Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham. "Mosgear, Birmingham." East 407.

· Buyers' · Guide.



Glue—
Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Bececolin, Cannon, London." City 1206.
Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Wapp, London." Avenue 3178.
Meudine Co., 8, Arthur Street, E.C. Bank 5873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3

Goggles—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Hack Saw Blades and Machines—
Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880.

Heating and Ventilating—
Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 372 (2 lines).
Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).

Hollow Spars—
McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718.

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1308.

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17 "Aneroid, Phone, London." Walthamstow 180.

Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London. "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1. "Vicksmag, Phone, London" Museum 430.
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry." Coventry 1008-1009.

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham. "Clifford, Birmingham." Central 42-43. Avenue 1432.

Metals in General—
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.
Pritt & Co., 46, Fenchurch Street, London, E.C.3 "Poetry, Fen, London." Avenue 995, 996, and 7996.
Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London." City 6342.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4059.
Aircraft Supplies Co., Ltd., Ascol House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton 1041.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3. Avenue 1432.
Lombard Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).

Metal Parts and Fittings—
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing. Eusroad, London." Museum 70.
Mountford, Fredk., Lt., Lifford, Birmingham. "Fremo, Birmingham." King's Norton 261.
Rubery Owen & Co., Darlaston, South Staffs.
Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston." Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford." Keynsham 21.

Metal Spinnings—
Arnold & Sons, Lawrence Road, Tottenham, N.15.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.
Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines)
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham." Central 793.
MacLennan, J., & Co., 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 374/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines).

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames
The Clegg Metal Engraving Co., Worthing. "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2. "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London." London Wall 3266-3267.

Pattern Making—
Fredk. Ward, 6, 7 and 8, Allsop Street, Upper Baker Street, W. Padd. 4743.

Piston Rings—
British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.

Plating, Nickel Silver and Electro Tinning—
Arnold & Sons, Lawrence Road, Tottenham, N.15.

Power Presses and Dies—
Bliss, E. W., & Co., 2a, Pocock Street, Blackfriars Road, London, S.E.1. "Blissdon, London." Hop. 4340.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames. "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104.
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." 24214 Leeds.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil. Yeovil 129.

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Invertors, Redditch." Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
Gosport Aircraft Co., Gosport. "Flight, Gosport" Telephone No. 217.
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Southampton 1337.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds. Leeds 21953.

Searchlights & Landing Lights—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Arnold & Sons, Lawrence Road, Tottenham, N.15.
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London" Vic 4830.
Arnold & Sons, Lawrence Road, Tottenham, N.15.
British Metal (Kingston), Ltd., Kingston-on-Thames [Staffs
Rubery Owen & Co., Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
Arthur Hill & Co., Silchester Road, North Kensington, W. Park 1443.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

BUYERS' GUIDE cont. on next page.

The · Aeroplane ·

Acceptance and Experimental Flights—

The Prodger Isaac Aviation Co. "Aeromnia, Piccy, London" Gerrard 278 (2 lines).

Acetylene Welding Plant—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London" Vic 4830

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone London" 3540 Victoria (3 lines).

Aeroplane Manufacturers—

Aircraft Manufacturing Co., Ltd., Hendon "Airmanship, Hyde, London" Kingsbury 220

Armstrong, Sir W., Whitworth & Co., Ltd., Newcastle-on-Tyne "Armstrong Aviation, Newcastle-on-Tyne." Gosforth 500

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds "Propellors, Leeds" Roundhay 345 (3 lines)

Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich" Norwich 851

British & Colonial Aeroplane Co., Ltd (The Bristol Co.), Filton, Bristol "Aviation, Bristol" Bristol 3000

British Caudron Co., Ltd., Broadway, Cricklewood, N.W.2. "Caudroplan, Crickle, London" Hampstead 5551

Central Aircraft Co., High Road, Kilburn, N.W.6. "Aviduction, Phone, London" Hampstead 1405 and 4424

Davidson Aviation Co., Ltd., Hammersmith, W.6 Hammersmith 1002 (3 lines)

Dawson, John, & Co., Ltd., Newcastle-on-Tyne. "Dependable, Newcastle-on-Tyne." Central 2004 (2 lines)

Eastbourne Aviation Co., Ltd., Eastbourne "Aircraft, Eastbourne" Eastbourne 1176

Grahame-White Aviation Co., Ltd., London Aerodrome, Hendon. "Volplane, Hyde, London" Kingsbury 120

Handley Page, Ltd., 110, Cricklewood Lane, N.W.2. "Hydrophid, Crickle, London" Hampstead 7420

Hooper & Co., Ltd., 54, St. James St., Piccadilly, London, S.W. "Sociable, St James, London" Regent 912

Mann, Egerton & Co., Ltd., Norwich "Motors, Norwich." Norwich 482 (4 lines)

Martinsyde Ltd., Brooklands, Byfleet, "Martinsyde, Weybridge" Woking 331; Byfleet 171

National Aircraft Manufacturing Co., Ltd., 15, Drummond Crescent, Seymour Street, Euston. Museum 3373

"Nieuport" & General Aircraft Co., Cricklewood, London, N.W.2 "Nieuscout, Crickle, London" Willesden 2455

The Regent Carriage Co., Ltd., 126/132, New King's Road, Fulham, S.W.6 "Carbodis, London" Putney 2240-2241.

Roe, A. V., & Co., Ltd., Manchester "Triplane, Manchester" City 8530-8531, Manchester.

Saunders, S. E., Ltd., East Cowes, I.O.W "Consuta, East Cowes" Cowes 193

Short Bros., Rochester, Eastchurch and Whitehall House, S.W. "Tested, Phone, London" Regent 378

Sopwith Aviation Co., Ltd., Kingston-on-Thames "Sopwith, Kingston" Kingston 1088 (8 lines)

Standard Aircraft Manufacturing Co., 28, Bow Common Lane, E. East 2823

Tarrant, W. G., Byfleet, Surrey "Tarrant, Byfleet" Byfleet 1, 2 & 3

Thames Aviation Works, 141, Curtain Rd., E.C.2. London Wall 9766

Vickers, Ltd., Imperial Court, Basil Street, Knightsbridge S.W.3 "Vickerfyta, Knights, London" Kensington 6810

Waring & Gillow, Ltd., Hammersmith. "Waristeu, Ox, London" Museum 5000

Westland Aircraft, Yeovil. "Aircraft, Yeovil" Yeovil 129.

White, J. Samuel, & Co., Ltd., East Cowes. "White, East Cowes" Cowes 3

Whitehead Aircraft (1917), Ltd., Richmond, Surrey "Whitecraft, Richmond, Surrey" Richmond 1780-1

Wycombe Aircraft Constructors, Ltd., High Wycombe, Bucks "Aircraft, High Wycombe" High Wycombe 84

Airships—

Airships, Ltd., High Street, Merton Wimbledon 1514

Short Bros., Rochester, Eastchurch, and Whitehall House, S.W. "Tested, 'Phone, London" Regent 378

Aluminium Castings (Sand and Die)

Coan, R. W., 210, Goswell Road, London, E.C.1. "Krankases, Isling, London" City 3846

Bent Timber Parts—

Hopton & Sons, George Street, Euston Square, London, N.W.1 "Hoptons, Euston-square, London" Museum 499
Also at Market Harborough, Leicestershire "Hoptons, Market Harborough" Market Harborough 15.

Bearings (Etonia Cast Phosphor Bronze)

Yorkshire Engineering Supplies, Ltd., Wortley, Leeds "Yes, Leeds" Central 3027.

Blowpipes (Oxy-Acetylene)

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London" Vic 4830.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London" Vic 3540 (3 lines)

Brass Sheets for Tipping Propellers—

Pritt & Co., 46, Fenchurch Street, London, E.C.3 "Poetry, Fen, London" Avenue 995, 996, and 7996

Buildings—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich" Norwich 851.

The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1

Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey Wimbledon 1334.

Rubery, Owen, & Co., Darlaston, South Staffs

The Wilfley Co., Ltd., Salisbury House, London Wall, E.C.2. "Wrathless, 'Phone, London" City 2681-2.

Cable Coverings and Cable Controls—

The Bowden Brake Co., Ltd., Tyseley, Birmingham "Bowden, Acock's Green" Acock's Green 103 & 104.

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Carburettors—

Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2. Victoria 4670.

Casein—

Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C.3. "Suricodon, Fen, London." Avenue 34 and 35.

Celluloid (Non-Flam.)—

Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London." Central 1509-7.

Clothing—

Burberry's, Ltd., Haymarket, S.W.1 Regent 2105

Dunhill's, Ltd., Euston Road, N.W.1 "Dunsand, London" North 3405-6

Coloured Rags—

Joseph, A., Earl Street, London Road Southwark, S.E.1. "New Mongo Sedist, London" Hop 83, 361, 4272

Component Parts—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (4 lines).

Central Aircraft Co., High Road, Kilburn, N.W.6 "Aviduction, Phone, London." Hampstead 4405 & 4404

P.D.V. Aircraft Co., Ltd., Princes Street, Richmond "Acros, Richmond" Richmond 1681

Thompson Bros (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros, Bilston" Bilston 10

Cords, Tapes, and Threads—

MacLennan, J., & Co., 10, Newgate Street, E.C.1 And at Glasgow. City 3115

Dopes—

British Aeroplane Varnish Co., Ltd., 166, Piccadilly, W.1 "Tetrafrec, Piccy, London" Gerrard 2312

British Cellulose Co., 8, Waterloo Place, S.W.1 "Cellulate, London" Regent 4046

The British Emaillite Co., Ltd., 10, Regent Street, S.W.1. "Ridleypren, Piccy, London" Gerrard 280

Cellon, Ltd., 22, Cork Street, London, W.1 "Ajawb, Reg, London" Gerrard 410

Clark Ingham, Robt., and Co., Ltd., Walter House, Bedford Street, Strand, W.C.2 "Pearline, Westrand, London" Regent 3925

Engines and Parts—

Allen, W. H., & Co., Ltd., Bedford "Pump, Bedford" Bedford No. 1

Arrol Johnston, Ltd., Dumfries "Mocar, Dumfries" Dumfries 281-282

The Beatty School of Flying, Ltd., The Broadway, Cricklewood, N.W.2 Hampstead 3000

Engines and Parts—

Beardmore Aero Eng., Ltd., 11, Great Portland Street, W.1. "Beardmore, London" Gerrard 258.

Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W.1 "Aerofight, Vic, London." Vic 7326.

Gordon Watney & Co., Ltd., Weybridge. "Mercédès, Weybridge" Weybridge 550 (7 lines).

Green Engine Co., Ltd., Twickenham. Richmond 1403.

Gwynnes, Ltd., Hammersmith, W. "Gwynne, Hammersmith" Hammersmith 1010.

Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London" Gerrard 8926

Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1654-5-6.

Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton" Wolverhampton 685

The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1 "Elevenfold, London" Walthamstow 408 (2 lines)

Electrical Accessories—

Belling & Co., Montagu Road, Upper Edmonton, N.18. "Belling, Edmonton" Tottenham 1084.

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2207; London Wall 1564

Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W.1. "Installing, Euston road, London" Museum 70

Premier Electric Heaters, Ltd., 358, 359, and 360, Bradford Street, Birmingham "Fahrenheit, Birmingham" Midland 681

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10 "Rodynalite, Phone, London." Willesden 2480.

Electric Cables—

E. Kalker and Co., Coventry "Kalker, Coventry" Coventry 218

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2207; London Wall 1564

Electric Lighting and Power—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564

Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Euston road." Museum 70 (4 lines)

Electro Platers and Metal Polishers' Engineers—

W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines)

Enamel—

Silica Enamel Co., New Cross, London, S.E.

Flare Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London" Victoria 3540 (3 lines)

Flexible Shafts—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61

Fluxes—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines)

Flying Schools—

Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton" Bournemouth 1180

Cambridge School of Flying and Aerodrome Co., 308, St. Andrews Street, Cambridge. "Carbon, Cambridge" Cambridge 5 and 1036.

Furniture (Office)—

Cookes (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2. London Wall 573 and 6179

Galvanising—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich" Norwich 851

Gauges—

J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17

Gears—

Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham "Mossgear, Birmingham" East 407

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Glue—

Cannon, E., & Co., Ltd., Lincoln London Office, 110, Cannon Street, E.C.4 "Beecolin, Cannon, London" City 1607

Improved Liquid Glues Co., Ltd., 61, Hermitage Street, E. (Crouch End) "Excronden, Wapp, London" Avenue 3178.

Mendine Co., 5, Arthur Street, E.C. Bank 6873.

Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3

Goggles—

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1 "Shatterless, Piccy, London." Regent 1340.

Hack Saw Blades and Machines—

Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London" London Wall 1880

Heating and Ventilating—

Chas. P. Kinnell & Co., Ltd., 65 & 65a, Southwark Street, London, S.E.1 "Kinnell, London" Hop 572 (2 lines)

Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines)

Hollow Spars—

McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718

Instruments—

British Wright Co., Ltd., 33, Chancery Lane, W.C.2 Holborn 1308

Instruments (Scientific, Altimeters, etc.)—

The Cambridge Scientific Instrument Co., Ltd., Cambridge "Instrument, Cambridge." Cambridge 642

Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17 "Aneroid, Phone, London" Walthamstow 180

Leather Cloth—

New Pegamoid, Ltd., 134, Queen Victoria Street, London "Pegamoid, Cent, London" City 9705 (2 lines)

Magneto Driving Pieces—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61

Magnetos—

The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1 "Vicksmag, Phone, London" Museum 430

The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry "Asteroidal, Coventry" Coventry 278

The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry." Coventry 1008-1009

Metal Manufacturers—

Clifford, Chas., & Sons, Ltd., Birmingham "Clifford, Birmingham" Central 42-43 Avenue 1432

Metals in General—

Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.

Pritt & Co., 46, Fenchurch Street, London, E.C.3 "Poetry, Fen, London." Avenue 995, 996, and 7996

Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London." City 6342.

Metal Parts and Fittings—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury" Oldbury 111 (3 lines)

Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London" Holborn 4959

Aircraft Supplies Co., Ltd., Ascot House, 125, Long Acre, W.C.2 "Upcast, Rand, London." Gerrard 276 (7 lines)

Arnott & Harrison, Ltd., Hythe Road, Willesden Junction Willesden 2207

Bayliss, Jones & Bayliss, Ltd., Wolverhampton (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton 1012.

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds "Propellors, Leeds" Roundhay 345 (3 lines).

British Metal (Kingston), Ltd., Kingston-on-Thames

Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3 Avenue 1432

Lombard Pim and Tube Co., Lombard Street, Birmingham "Lombardic, Birmingham" Midland 211 (2 lines)

Metal Parts and Fittings—

Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1 "Installing, Euston road, London" Museum 70

Mountford, Fredk., Ltd., Lifford, Birmingham "Fremo, Birmingham" Kings Norton 201

Rubery Owen & Co., Darlaston, South Staffs.

Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66

The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.

The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London" Regent 1181.

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10 "Rodynalite, Phone, London" Willesden 2480.

Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros, Bilston" Bilston 10

Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—

Montgomery, Smith & Co., Ltd., Keynsham, near Bristol "Ingenuity, Saltford" Keynsham 21.

Metal Spinnings—

Arnold & Sons, Lawrence Road, Tottenham, N.15

Metric Bolts—

Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415

Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—

Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast" Belfast 4033-4034-4035

Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines)

British Metal (Kingston), Ltd., Kingston-on-Thames.

Brown Bros., Ltd., Great Eastern Street, E.C.1 "Imbrowned, Bethroad, London." London Wall 6300

Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham." Central 795.

MacLennan, J., & Co., 30, Newgate Street, E.C.1, and at Glasgow. Tapes, Cords and Threads City 3115

Motor Cars—

Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries" Dumfries 281-282

Mann, Egerton & Co., Ltd., 37-41, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70

Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines)

Nameplates and Labels—

British Metal (Kingston), Ltd., Kingston-on-Thames

The Clegg Metal Engraving Co., Worthing. "Clegg, Worthing."

Observation Panels—

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340

Oils—

C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2. "Cheery, Cent, London." Central 11305 and 13466

Parachutes—

E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal, London" London Wall 3266-3267

Pattern Making—

Fredk. Ward, 6, 7 and 8, Allsop Street, Upper Baker Street, W. Padd. 4745

Piston Rings—

British Chuck & Piston Ring Co., Coventry "Rings, Coventry." Coventry 725

The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield "Ocean, Sheffield." Sheffield 2140

Plating, Nickel Silver and Electro Tinning—

Arnold & Sons, Lawrence Road, Tottenham, N.15

Power Presses and Dies—

Bliss, E. W., & Co., 2a, Pocock Street, Blackfriars Road, London, S.E.1. "Blissdon, London" Hop. 4340.

Presswork—

Rubery Owen & Co., Darlaston, South Staffs

Terry, Herbert & Sons, Ltd., Redditch "Springs, Redditch" Redditch 61

Propellers—

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds "Propellors, Leeds" Roundhay 345 (3 lines)

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich" Norwich 851

Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston" Kingston 672

Integral Propeller Co., Ltd "Aviprop, Hyde, London" Hendon 2 Kingsbury 104.

Lang Propeller, Ltd., Weybridge "Aerosticks, Weybridge" Weybridge 520 521

Mann, Egerton & Co., Ltd., Norwich "Motors, Norwich" Norwich 482 (4 lines).

Oddy, W. D., & Co., Leeds "Airscrews, Leeds." 21211 Leeds.

Stanley Aviation Co., 67, Kingsland Road, E.2. City 3347.

Westland Aircraft, Yeovil. "Aircraft, Yeovil." Yeovil 129.

Propeller Cases—

The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—

The Foster Instrument Co., Letchworth, Herts Foster Instruments, Letchworth. Letchworth 26.

Radiators—

Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London" Mayfair 4826.

Rigging for Aircraft—

Cradock, Geo., & Co., Ltd., Wakefield, England "Cradock, Wakefield" Wakefield 160

Screw-driving Machines—

Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Inventors, Redditch" Redditch 74

Seaplane Manufacturers—

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds "Propellors, Leeds" Roundhay 345 (3 lines)

Gosport Aircraft Co., Gosport "Flight, Gosport" Telephone No. 217

Mann, Egerton & Co., Ltd., Norwich "Motors, Norwich" Norwich 482 (4 lines)

Short Bros., Rochester. "Seaplanes, Rochester" Chatham 627.

Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton" Southampton 1337.

Seats for Aeroplanes—

Bowser, E., 50, Park Lane, Leeds Leeds 21053.

Searchlights & Landing Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London" 3540 Victoria (3 lines).

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10 "Rodynalite, Phone, London" Willesden 2480.

Shackles—

British Gold Shell Ring Co., Ltd., Hounslow, Middlesex "Golshel, Hounslow" Hounslow 254.

Sheet Metal Pressings—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury" Oldbury 111 (3 lines).

Arnold & Sons, Lawrence Road, Tottenham, N.15.

Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds "Propellors, Leeds." Roundhay 345.

W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham" Central 550

British Metal (Kingston), Ltd., Kingston-on-Thames

London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham East 497 Birmingham.

Rubery Owen & Co., Darlaston, South Staffs

Sheet Metal Work—

The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London" Vic 4830.

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The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1 "Selaero, Phone, London" Regent 1181

Arthur Hill & Co., Silchester Road, North Kensington, W. Park 1413.

Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London" Victoria 3540 (3 lines).

BUYERS' GUIDE cont. on next page.

"The Aeroplane" Buyers' Guide.—*continued.*

Small Tools—
The Small Tool Supply Co., Ltd., Avenue Chambers, Southampton Row, W.C. "Prosait, West-Cent, London." Museum 2655.

Sparking Plugs—
Lodge Sparking Plug Co, Ltd., Rugby. "Igniter, Rugby." Rugby 235.
Ripault, Léo. & Co., Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

Springs—
Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Stampings—
Arnold & Sons, Lawrence Road, Tottenham, N.15.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3. Avenue 1432.

Steel—
Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 to 3237.
Guthrie, J. B., & Son, 30, St Mary Axe, E.C.3. Avenue 1432.
Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Steel Stamps and Markings—
John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).

Tanks & Cowls for Aeroplanes
Zephyr Ventilating Co., Ltd., Tyopiatt Road, Bristol. Telegrams — Zephyr, Bristol

Taper Pins—
Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—
MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Timber—
Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526.
Hopton & Sons, George Street, Euston Square, London. N.W.1. "Hoptons, Eusquare, London." Museum 496. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.
J. Owen & Sons, Ltd., 109a, Borough High Street, S.E.1. "Bucheron, London." Hop 3811 (2 lines).

Time Recorders—
Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles— Staffs.
Rubery Owen & Co., Darlaston, South Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W "Installing, Euston road." Museum 70 (4 lines).

Tyres and Wheels—
The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent." Gerrard 1214 (5 lines).

Undercarriages—
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.
Clark Ingham, Robt., & Co., Ltd., Walter House, Bedford Street, Strand, W.C.2. "Pearline, Westrand, London." Regent 3923.
Harland, W., & Son, Merton, London, S.W.19. "Harland, Wimbledon 45." Wimbledon 45 and 1395.
Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—
Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95.

Washers— Avenue. 1432.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Watchmakers and Jewellers—
(Silver Models)—
Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines).

Welding and Cutting Plant—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma Vic, London." Vic 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Welding Repairs—
Arnold & Sons, Lawrence Road, Tottenham.
Barimar, Ltd., 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.
The New Welding Co., 26, Rosebery Avenue, London, E.C.1. "Windoneeda, Holb, London." Holborn 5252.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Wind Shields—
Auster, Ltd., 133, Long Acre, W.C. "Winflector, London." Regent 5[illegible]0.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Wire Gauze—
Greening, N., & Sons, Ltd., 16, Finsbury Street, London, E.C.2. "Setscrew, Finsquare, London." London Wall 1082.
Guthrie, J. B., & Son, 30, St Mary Axe, E.C.3. Avenue 1432.

Wires and Cables—
Bruntons, Musselburgh, Scotland. "Wiremill, Musselburgh." Musselburgh 28.
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466 (3 lines).

Wirework—
Terry, Herbert, & Sons Ltd., Redditch. "Springs, Redditch." Redditch 61.

Woodworking Machinery—
Robinson, Thomas, & Son, Ltd., Rochdale. "Robinson, Rochdale." Rochdale 467.
Sagar, J., & Co., Ltd., Halifax. "Sawtooth, Halifax." Halifax 136.
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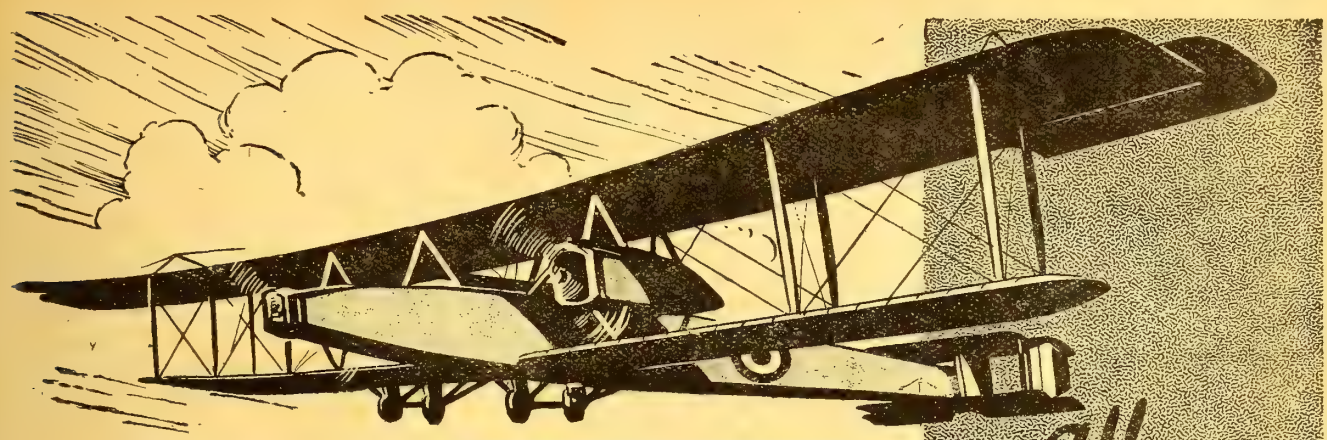
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THE PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by THE AEROPLANE from the current Official Patents Records.

PATENT APPLICATIONS.

Aeronautical Instrument Co. Aircraft. No. 10217. June 20th.
Ash, A. Means for dropping bombs from aircraft. No. 10140. June 20th.
Baker, A. F. Applying dope to aeroplane wings, etc. No. 10262. June 21st.
Bowden, W. Aeroplane engine controls. No. 10230. June 21st.
Butt, E. E. W. Airships. No. 10270. June 21st.
Chapman, F. W. Devices for holding and straining tie-rods or tension wires on aircraft. No. 10218. June 20th.
Danin, J. Solution for treating aeroplane canvas, etc. No. 10258. June 21st.
Green, J. F. Means for propelling aircraft. No. 9944. June 17th.
Green, J. F. Means for propelling aircraft. No. 9945. June 17th.
Hobbs, E. Sighting-apparatus for dropping bombs from aircraft. No. 10226. June 20th.
Holroyd, V. A. Fairings or streamlinings for aircraft. No. 10017. June 18th.
Joseph, E. L. Means for anchoring ends of wires subject to tensile stress. No. 10046. June 18th.
Krammer, H. E. Battle-plane. No. 9997. June 17th.
Krammer, H. E. Landing device for aeroplanes. No. 9998. June 17th.
Krammer, H. E. Aeroplane. No. 9999. June 17th.
Krammer, H. E. Aeroplane control mechanism. No. 10000. June 17th.
Letcher, T. C. Spars, beams, or girders. No. 9928. June 17th.
Page, F. H. Aircraft. No. 9926. June 17th.
Perks, E. W. Streamline fairing for aircraft. No. 10317. June 22nd.
Sigurdsson, O. V. Incendiary bullets. No. 9950. June 17th.
Sopwith Aviation Co. Aeroplanes. No. 10263. June 21st.
Wildey, E. M. Tanks for aeroplanes. No. 10079. June 18th.

COMPLETE SPECIFICATIONS ACCEPTED, PRINTS OF WHICH CAN BE OBTAINED ON AND AFTER JULY 11TH, 1918.

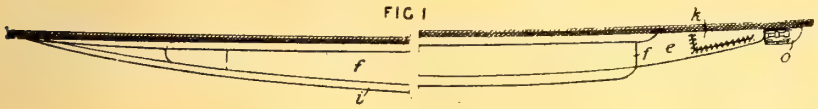
116,534. June 12th, 1917. Calthrop, E. R. Parachute-launching devices.

116,596. Aug. 2nd, 1917. Newbold, H. Goggles for airmen, motorists, and others.

ABRIDGMENTS OF RECENTLY PUBLISHED SPECIFICATIONS.

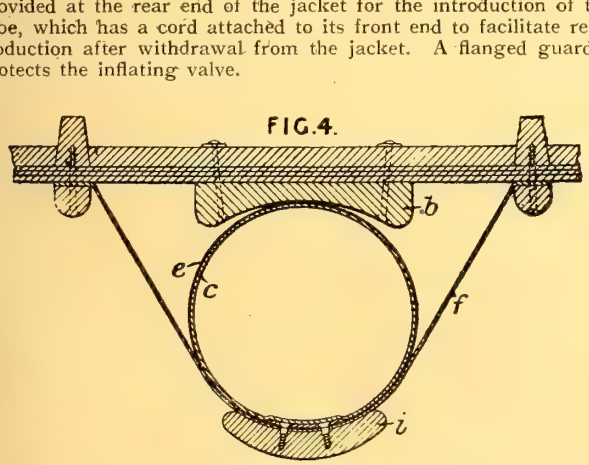
115,260. Aeronautics; Ship's Fenders. SAUNDERS, LTD., S. E., PORTER, S. E., and GOATLEY, F., Columbine Works, Medina Road, East Cowes, Isle of Wight.

FIG 1



A pneumatic cushion or buffer for use on aircraft or as a fender for a boat comprises an inner inflatable tube *c* contained in a flexible but inextensible jacket *e* secured to the framing of the craft, and provided with a shoe *i*. The jacket e is of leather or canvas, and has leather slings *f* by which it is attached to the craft as shown. The jacket bears against a batten *b*. A flap *k* is provided at the rear end of the jacket for the introduction of the tube, which has a cord attached to its front end to facilitate reintroduction after withdrawal from the jacket. A flanged guard *o* protects the inflating valve.

FIG.4.



115,256. Internal-combustion Engines. COOK, L. C., 1, The Avenue, Chingford, London. April 3rd, 1917, No. 4770.

VALVES; CYLINDERS AND VALVE-CHESTS, COOLING.—A rotary-sleeve valve *a*, which is surrounded by a passage a^2 in communication with the combustion chamber, controls separate and substantially coaxial inlet and exhaust passages *g*, *h* in a tubular bearer *f*. These passages are spaced from each other and from the bearer, and terminate in ports *i* controlled by the valve port *b*. In multiple-cylinder engines, a separate valve is provided for each cylinder, so that each bearer is subject to the heat of one cylinder only. In the form shown in Fig. 3, the valve casing *d* is integral with the cylinder, and the bearer *f* is cooled by water circulating in the space between the passages *g*, *h* and the outer wall of the bearer. In a modification, the cylinder and valve-casing are detachably connected, and provided with cooling-ribs. In the case of a rotary or radial aero-engine, a reduced extension of the valve forms the induction pipe.

FIG.3.

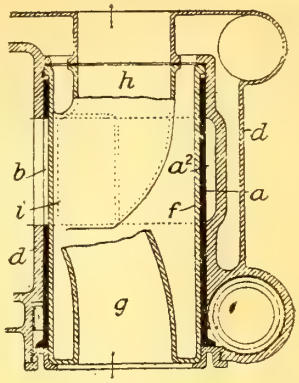
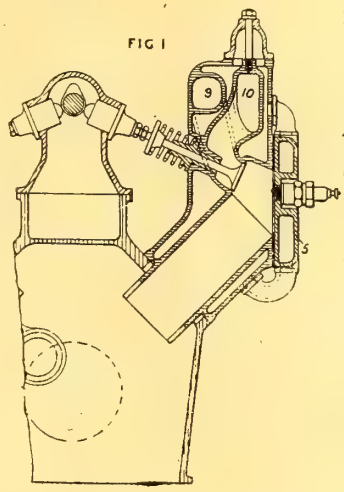


FIG 1



115,132. Internal-Combustion Engines. GUY, S. S. Woodview, Finchfield, Wolverhampton, Staffordshire.

VALVE-GEAR, CYLINDERS, COOLING AND CONSTRUCTION OF.—In an engine having inclined cylinders with an overhead camshaft between them, the valve stems make acute angles with the axes of the cylinders and are engaged directly by the actuating cams. To facilitate access to the valves, cylinder covers 5 are arranged vertically. The cylinder may be constructed without covers, the valves being withdrawn through ports in the cylinder ends. The inlet and exhaust passages 9, 10 traverse water spaces in the cylinder heads.

THE AIRCRAFT WORKERS' SPORTS.

The Aircraft Workers' Sports, organised by the Y.M.C.A. were held on June 22nd at the Stamford Bridge track, and proved even a greater success than the meeting held last year. The competitors totalled 700, representing 31 firms. The programme was a very long one

The array of prizes was very imposing, and the presentations were made by Brig.-Gen. W. Alexander, C.M.G., D.S.O.

The winners of the different events were as follows :—

100 Yards Veterans' Handicap ("Flight" Cup).—Reading, time 12 4-5.

220 Yards Flat (Cellon Challenge Trophy).—Aggersburg (Whitehead's), time 24 4-5.

440 Yards Flat (Whitehead Challenge Trophy).—Howell (Darracq).

880 Yards Flat (Sopwith Challenge Cup).—Hodge (Vickers, Crayford).

One Mile Flat (Triplex Trophy).—Hodge (Vickers).

2 Miles Walk (Central Aircraft Co. Prize).—Theobald (Vickers).

High Jump (Handley Page Prize).—Smith (Napier), 5 ft. 4 in.

Long Jump (Darracq Silver Cup).—Hicks (Handley Page), 17 ft. 10 in.

Inter-Works Tug-of-War (Aircraft Manufacturing Co. Challenge Trophy).—Sopwith's.

Inter-Works Relay Race.—Vickers, Crayford.

Sack Race (Women).—Miss Witham (Aircraft Mfg. Co.).

Half-Mile Cycle (Auster Silver Cup).—McKaig (Hooper's).

Three Miles Cycle (Highgate Aircraft Co. Silver Cup).—Turner (Inte Pro.)

Boat Race.—Handley Page.

Obstacle Race ("Flight" Cup).—Hazell (Fairey Aviation Co.)

Ladies' 60 Yards Flat (Cellon Challenge Rose Bowl).—Miss White (Darracq).

Ladies' 880 Yards Walk (Aircraft Manufacturing Co. Prize).—Miss Chapple (Whitehead's).

Boot Race.—Howe (Central Aircraft).

Boys' Relay Race.—Vickers.

Three-Legged Race.—Miss Carter (Whitehead's) and Mr. Higgins (Handley Page).

The majority of the prizes was supplied by the Goldsmiths and Silversmiths Co., who make a speciality of this branch of their business, and some very fine examples of workmanship were to be noticed, notably those presented by the Aircraft Manufacturing Co., Ltd., and the Triplex Safety Glass Co., Ltd.



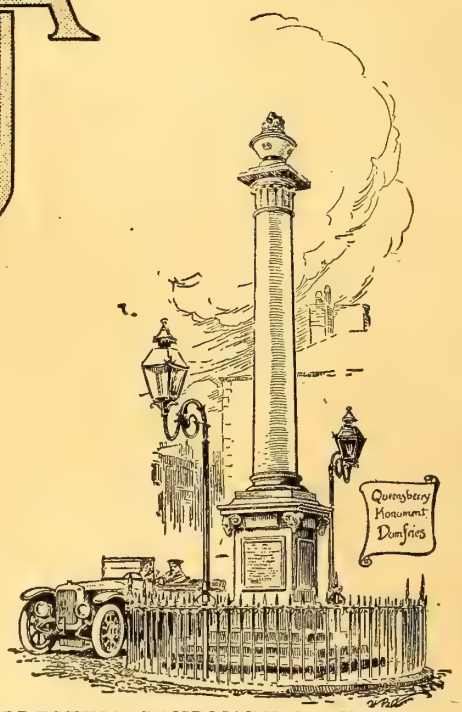
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The Economics of Aerial Transport.

By "MEDWAY."

When the subject of the regular civilian use of aeroplanes for public service or for the carriage of mails or light goods comes up for discussion, there are plenty of people who think that the whole matter can be settled by merely stating that the aeroplane has too limited a carrying capacity, and costs too much to operate.

Now, as a matter of fact, the carrying capacity already compares not unfavourably with that of a fairly substantial motor chassis, and the high cost of operation is by no means a foregone conclusion, if we take into account the fact that time is of value, and that expenditure upon handling and transhipment en route must always be added to the actual running costs of the methods of transport employed.

Thus, for example, if we wish to deliver a package from, say, Guildford to Nottingham, this package must first be carted by road vehicle to the railway station, and there unloaded and loaded into a van or truck. On reaching London it will probably have to be transferred to another horsed vehicle in order to get it across to a new starting point. Then it must again be loaded into a train, and when it reaches Nottingham it must be handled yet again in transferring it from train to van and once more in finally unloading it.

In the whole journey there are well over half-a-dozen handlings, each involving labour costs and delays. If the package had to go to France or to Ireland, the journey would be still further complicated by the introduction of the sea passage. Carriage by water is cheap enough in itself, but it can only be run between points where harbours are available. Consequently, in nine cases out of ten, it involves a circuitous route, and in almost every case it introduces further delays.

Running Cost v. Conveying Cost.

The fact of the matter is that the actual cost of running a conveyance must not be confused with the cost of carrying people or goods by its means. The one is merely a part of the other, and the percentage that it represents may be small or great.

In ordinary times it might be cheaper to come round from Glasgow to London by a coasting steamer than to make the journey by train, but there are very few people who would choose the first alternative. For one thing, we must remember that a journey by a passenger involves incidental expenditure more or less proportional to the time occupied. If a journey cannot be completed in one day, hotel expenses must be added to the cost of the ticket.

The same general principle runs through the organisation of all forms of transport. If then we admit that, let us say, an aerial service from London to Manchester would cost more per mile in operating costs than the same journey performed by motor-car by the same number of people, it does not in the least follow that the latter is to be preferred.

Fuel and oil are not the only items. The aeroplane may also be more expensive as regards repairs and depreciation. On the other hand, it does not wear out tyres or add to the cost of maintaining the public roads.

A trained pilot for a long time to come will be a more expensive luxury than a motor driver, and altogether the running costs of the aeroplane will probably be appreciably larger than those of the car.

For that matter the running costs of a car, per passenger carried, are appreciably greater than those of a railway train, but the latter does not get all the traffic. Similarly, the costs of rail transport are considerably greater than those of canal or coastwise transport, but again the more expensive method is frequently preferred as being more rapid, direct, and convenient.

In short, the question of whether any particular means of transport is commercially sound cannot possibly be settled simply by comparing its cost with that of other methods. To do this is to ignore altogether the value of time, merely because in the great majority of instances it cannot figure in an ordinary statement of accounts.

The Time Element.

There still remain countries in which the value of time is not appreciated by the natives. In such countries the provision of rapid travelling facilities are dependent upon the colonising element. The creation of such facilities is a very long and expensive job, and if the number of people likely to make use of them is comparatively small, then the interest on the capital outlay is very high per head or per mile covered.

Let us illustrate this point by taking an extreme case. A single passenger desires to travel a distance of several hundreds of miles from one point inland to another point inland, across uninhabited or uncivilised country. A sea passage is out of the question. Nobody but a lunatic would suggest laying down a railway simply for conveying that one passenger. To propose the construction of a road would be almost equally mad.

Ancient v. Modern.

We are, therefore, reduced to a choice between two alternatives—the most ancient and the most modern methods of travelling; that is to say, the beast of burden and the aeroplane. If the former method is adopted the time taken on the journey is immense, and the cost of living must be added to the estimated value of the time and to the cost of providing and feeding the necessary beasts. If an aeroplane were available it would unquestionably offer infinitely the cheaper method of transit.

Now gradually increase the demand for travelling facilities. Sooner or later a point may be reached at which the traffic is sufficiently great to justify the construction of a road on which motor vehicles may run. If it develops still further, it may again justify the construction of a railway, but this only happens when the interest on the capital expenditure involved in the construction of the railway line represents a smaller amount than the difference between the operating costs of the road and the rail traffic.

Between points on the seaboard transport can be arranged without heavy capital expenditure on creating a track or heavy annual expenditure upon maintaining it. Docks and piers may have to be constructed and harbours improved.

Dead Charges.

For overland transport the aeroplane is in rather the same position. Its track is ready for it, and needs no creation or maintenance. All that is necessary is the provision of landing grounds and repair bases.

The capital expenditure involved is trifling. The time saved is enormous. It would then be perfectly ridiculous merely to compare operating costs with those of other methods of land transport when once established.

We see then that under some conditions the aeroplane will actually be the cheapest method of transport. Under other conditions it will not be the cheapest, but will still be chosen because it is the quickest, and the traveller's time is worth money. It will then compare with road or rail transport in somewhat the same way as the telephone or the telegram compares with the postal service.

Mail Matter.

In this actual matter of the carriage of mails it will occupy an intermediate position, and may therefore charge an intermediate price, though in certain cases it would justify higher charges than those made for communicating the same number of words by telegraph. This would happen whenever the written word is necessary for the purchase of making a firm offer, transmitting strictly confidential information, or definitely concluding a contract.

Under some conditions again it will have the advantage in efficiency over the telephone. There are limitations to the business that can be done by the latter method. Delicate negotiations can often only be concluded at a personal interview, and the aeroplane will convey not merely a man's thoughts and voice, but the man himself.

It cannot equal a long distance telephone service in speed, but the extra expenditure of time may be justified by the advantage of a personal interview or of a personal review of local conditions which must be studied before a tender for some big work can be submitted.

The Repetition of History.

We have a habit of regarding any new and great invention first of all as a plaything or a joke. The railway train itself was ridiculed in its early days, and it took a long time to convince people of the supremacy of steam over sail.

The telegraph and the telephone were for a period viewed as

scientific toys. The Marconi system of wireless telegraphy was regarded at first as ingenious, but of no real practical utility.

On the road the motor-car, the motor-cab, and the motor-omnibus, one after another, came in for their share of ridicule, and finally took their places in the existing order of things.

In just the same way the aeroplane is destined to become a recognised method of transport both of passengers and of goods, and its potentialities are such that it will undoubtedly have as great an effect upon the world's system of communications as any invention that has gone before it.

It is, in fact, rather curious that, although its capabilities have been so clearly demonstrated in war, a very large number of people still refuse to admit that it will possess any very material value entirely dissociated from military service.

A DISCOURAGING EXPERIMENT.

The older readers of The Aeroplane will remember the notorious so-called aerial post which was flown from Hendon to Windsor in September, 1911, a performance which, sanctioned by the British postal authorities, demonstrated very successfully how aerial mails of the future would not be run, and although the only important feature of the demonstration was an accident which nearly cost M. Charles Hubert his life, the affair acquired a good deal of publicity owing to its novel nature, and to the fact that the late Mr. Hamel, a popular idol, was concerned therein.

For many months past much has been seen in the American papers about a wonderful aerial mail service which was to run regularly from Washington to New York, via Philadelphia, but the first full accounts of the inauguration of the service to be received seem to suggest that little advance has been made by our friends in America over the effort made in this country in 1911, when the relative progress of aeronautics is taken into consideration.

On May 15th last the first flight was made from Washington to Philadelphia, and the load carried was 6,600 letters, weighing 140 lbs. The start of the machine, which was a Curtiss fitted with a 150-h.p. Hispano-Suiza, was timed for 11.30 a.m., but Lt. Boyle, the pilot, could not leave until fifteen minutes late. He then lost his way and landed about 15 miles south of Baltimore, and then broke his airscrew. After repairs a re-start was made and the pilot flew back to Washington, arriving at 7.45 in the evening, the mails being sent humbly to Philadelphia by train.

On the same day an aeroplane left Philadelphia at 1.14 p.m. with 5,000 letters and arrived safely at Washington at 2.50, and letters delivered by hand in the city by 4.45 p.m. The machine was piloted by Lt. J. C. Edgerton.

The next day Mr. Edgerton flew from Washington to Philadelphia, starting at 11.30 with 7,930 letters for distribution in Philadelphia and in New York. Philadelphia was reached by 1.38 p.m.

Elaborate arrangements had been made to take any overplus of mails by train, but it can clearly be seen that the experiment did not receive the popular send-off which might have been expected.

On May 15th a machine successfully flew from New York to Philadelphia, and 3hrs. 20mins. later another machine started from Philadelphia and flew to Washington with the mails received from New York. Another machine flying northward lost its way and had to land, breaking its airscrew at Waldorf about 22 miles from Washington.

The service of the 16th does not seem to have been any more successful. The south-bound consignment which left New York before noon did not arrive at Washington till 8.35 p.m. Lt. Stephen Bonsal, jnr., the pilot, lost his bearings in a fog and landed at Bridgetown, N.J., forty miles from Philadelphia. The mails were taken on by land to Philadelphia and thence left for Washington at 5.15, piloted by Lt. Walter Miller, who sustained engine trouble 25 miles out and was forced to return to Philadelphia.

Lt. J. C. Edgerton, who had already arrived from Washington in Philadelphia at 1.35 p.m., volunteered to take the mails on, and finally got them to Washington at 8.35 p.m.

On the south-bound trip Mr. Bonsal had carried 237 pieces of mail.

A southward trip was made on the 17th by Lt. Paul Culver, who left Belmont Park at 11.24, arrived at Philadelphia at 12.40 and Washington 3 p.m. Lt. Tory H. Webb made a round trip from Belmont Park to Philadelphia and back with a passenger.

The record for the first three days does not compare well with railway schedules; the New York—Washington trips by air taking 3hrs. 20mins., 9hrs. 6mins., and 3hrs. 36mins. respectively. The train journey takes about 6 hours.

A really good flight was made on the 18th by Lt. Bonsal, who flew from New York to Washington and back in a little more than five hours.

The results indicate precisely the evils against which this paper has always warned the over-enthusiastic converts to aviation who believe that an aeroplane is "*capable de tout.*" Over-enthusiasm is as dangerous as unbelief, and in some ways worse, for it leads to ridicule, and so creates unbelief instead of mere neutrality.

However, possibly the lesson of the booming, the subsequent break-down, and the recent satisfactory reconstruction of the American aeroplane programme, will serve as an argument to convince people that if the American "aeroplane" postal service is not yet "all it was cracked up to be," that is no reason why it should not become a regular working proposition when America possesses engines, aeroplanes (instead of airplanes) and pilots adequate for the work.

The unfortunate commencement of the service may reasonably be put down to misfortune, but bad organisation is indicated on the part of those who saw to the supply of the machines, which are very ordinary Curtiss two-seater aeroplanes which cannot expect to beat fast train services by very much, and if the American public are not enthusiastic at the idea of paying 25 cents for the transmission of a letter by aerial post as a novelty, their enthusiasm is not likely to increase when the service ceases to become a nine days' wonder, especially if interruptions are to occur with anything approaching frequency.

If at the present juncture really fast aeroplanes could not be spared, it would have been better to let the business alone for the time being, because nothing succeeds like success, and once the American public has decided that an air post is not worth while it will be difficult to revive enthusiasm.

If high speed aeroplanes could not be spared, the demonstration should have been devoted to a service between cities which are not in direct railway communication, where its value would have been more readily apparent.

One trusts that if and when an aerial postal service is started in this country, the promoters will take care to evolve an air route which will demonstrate its utility in a striking manner. For instance, an aerial mail service between London and Birmingham or London and Doncaster is sheer waste of time, because once the time for collection and delivery has been added on to the actual flying time of short, straightforward runs open to railway communication, the saving is not worth while. On the other hand, an aerial post service between London and Paris, a route which in the ordinary way involves transhipment from train to boat, and from boat to train, a case so convincing can be produced which cannot fail to impress the most sceptical, but even so no mistake must be made about the type of machine which is used, the reliability of its engine, and the skill of its pilot as a navigator. The man who pays a premium for a letter to be sent in a hurry and who once suffers the inconvenience created by an "unfortunate" delay will not be bothered with trying further experiments.

A MOST USEFUL PUBLICATION.

The British Italian Commercial Association has issued a most useful book on metric weights and measures and their British equivalents which should be in the hands of every manufacturer and agent who is interested in over-seas trade

British manufacturers are particularly prone to send to foreign countries catalogues and business correspondence in which money and measures are given in British measures. This obviously places them at a disadvantage with other countries, such as Germany, which not only use the metric system themselves, but take the trouble to conduct their correspondence in the monetary units in use in the particular country with which they are corresponding.

The British-Italian Commercial Association has been formed to foster trade relations between Italy and the United Kingdom and other parts of the British Empire. The President is the Earl of Plymouth and the Hon. Presidents are Sir Albert Stanley, M.P., President of the Board of Trade, and Lord Robert Cecil, M.P., Under Secretary of State for Foreign Affairs. The executive council contains the names of a number of most important business men, and membership is limited to British or Italian firms.

One therefore recommends the Association to the consideration of British aircraft firms who desire to do business with Italy either during or after the war. Whether British aircraft firms join the Association or not, they will certainly find the book to which reference has been made of very great interest and value. It is published by Eyre and Spottiswoode, and the price is 5s. net. As the book is not published for profit but in the interests of international trade, it is uncommonly good value.

Quite apart from the tables giving the respective values of the various coinages both in Italian and English, the book contains matter of immediate interest to aircraft firms, in that it gives also the specific gravities of a number of materials used in aircraft, both metal and timber, the materials being given in both languages. Incidentally, much information in the book is equally valuable when dealing with any other country besides Italy which uses the metric system of measurement.

COMMON SENSE IN AUSTRALIA.

News has been received that the Australian Government has prohibited the importation into Australia of American-made Bosch magnetos.

The High Commissioner of the Commonwealth, in a letter announcing this fact, says that "this action has been taken in order that the Commonwealth may not be a party to maintaining German trade names for the ultimate benefit of German manufacturers after the war."

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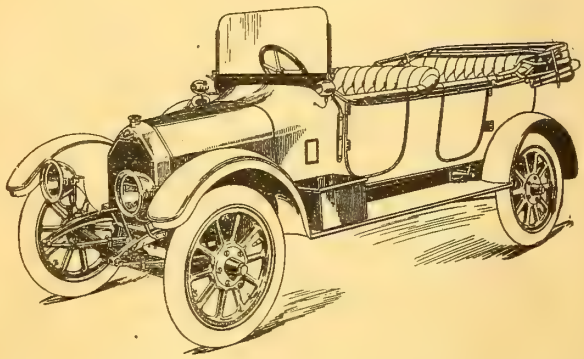
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THE AIRCRAFT TRADER

MARKET TOPICS.

Prices are for quantities on usual terms.

COPPER.—Home Trade.—The position here remains unchanged. Supplies continue satisfactory, but it is only possible to obtain metal for national requirements.

U.S.A. Trade.—The dispute over the official price still continues, the latest report being that the Board announced their decision before producers had an opportunity of giving their main reasons for applying for an advance. As pointed out previously in these columns, the profits made by the mining companies would indicate that they are doing very well indeed, and there does not appear to be much ground for complaint.

The producers do not, apparently, intend letting the question drop, and there will most likely be a renewal of the controversy in the near future. The output of the refineries does not show much improvement, although recent reports indicate that it exceeds the consumption.

Official prices remain unaltered.

TIN.—This metal is the only one which is providing interest on the metal market, and developments are being keenly watched. The Eastern position is still causing a little anxiety, although it is understood that America is importing Tin from Batavia, and if sufficient quantities can be obtained from there and Great Britain there is no reason whatever why prices should not be kept down to a reasonable level.

At the present time Eastern Tin is selling freely at prices which are about £9 per ton higher than London prices, and this alone would indicate that a further reduction is not likely at present. Furthermore the estimated consumption of U.S.A. is very large, and some heavy forward purchases are expected. The position here is fairly satisfactory, substantial quantities of Tin having recently arrived. The most important feature of the market is the adjustment of the price of English Tin. Hitherto English Tin has been sold at much higher prices than was permitted for other brands of Tin, and large quantities were disposed of for export. The Controller has now put an end to this, and the price of English Tin in future will be the daily settlement price of the London Metal Exchange.

COMPARATIVE PRICES.

June 24th	£332	0	0 per ton.
June 18th	£329	0	0 per ton.
June 7th	£331	0	0 per ton.
The East	£340	0	0 per ton.

LEAD.—There is nothing of interest to report, supplies being under strict control, and official prices remaining unchanged. Satisfactory supplies are being received.

STEEL.—There appears to be ample supplies of Aircraft Steels available at present. In fact, the Steel position generally is very favourable; the output is well ahead of the consumption, and stocks of certain classes of Steel are accumulating. The output of High Speed and Cast Steels continues to improve, and, in fact, in certain quarters application is being made to the authorities to grant permits for exportation to America. There is a feeling that there will be a revision of prices shortly, to cover recent advances in wages. There has not yet, however, been any official notification.

TIMBER.—The position is still very obscure, and great interest is being shown in the results which will be obtained when the new Spruce substitute is put to practical use. In several cases the evil day is being postponed. In any case there does not appear to be much hope of anything else coming along, and sooner or later the present stocks of Silver Spruce will be exhausted and the only material available will apparently be a substitute. What will happen if this proves to be another fiasco?

Has it not occurred to the authorities that it would be a wise step to instruct constructors to conserve their Silver Spruce stocks on the more important aeroplane parts, such as spars and struts, and cut substitute timber up instead of Silver Spruce for small unimportant parts where even ordinary deal might be used.

Plywood has still managed to evade the tentacles of the Controller, but presumably only for a short time.

The order controlling this material is bound to be issued soon, and then . . . ? Comment must be reserved until a later date. One thing is practically certain, we shall not do any better than we are doing at present as far as supplies are concerned. In fact, the plywood makers and importers have done remarkably well during the past twelve months. At one time we were threatened with a disastrous shortage of this material. It is, however, gratifying to say that there is now no fear of this, unless the authorities decide that it would be fatal for them to leave "well" alone.

Mahogany supplies are not quite as satisfactory as they were a month ago.

FABRIC.—The official war Fabric recently received by a few factories is as ingenious as the German war bread which some of our prisoners have brought with them. However, it is something to find that the experts have decided that after all planes can be covered with something besides the finest linen, but just to think that the manufacturer is being called upon to pay over 3s. per yard for it.

COVERING AND DOPING.

Apropos recent notes concerning the covering and doping of aircraft parts, the Hurlingram Aircraft Company, whose offices are at 91c, Dynevor Road, High Street, Stoke Newington, N.16, state that they were actually the first firm to take up the covering and doping of aeroplane wings as a speciality.

Since their first factory was opened another branch has been started where the firm is specialising in big work and also catering for the despatch of parts direct to R.A.F. store after passing A.I.D. without returning the finished part to the original maker. This seems to be a good arrangement as it obviously saves at least three extra handlings and consequent risk of damage.

The partners in the firm are Messrs. H. Hurlin and W. Ingram. Mr. Hurlin will be remembered as one of the very early experimenters with aircraft. His experience dates back to 1909, or thereabouts.

SYNDICATION IN THE BRASS INDUSTRY.

The following statements have been received for publication:—

The detailed specific scheme of Syndication which has been prepared and placed before the various firms in the Brass Industry by Mr. Howard F. Smith (a member of one of the Birmingham firms) is creating a vast amount of interest throughout the Industry, not only in Birmingham but in other parts of the country.

Details are being closely examined, and the scheme is gaining adherents at such a rapid pace that it is hoped before long things will assume a definite shape.

Mr. Smith's scheme has been put forward with the fullest possible publicity, as he believes that if the confidence of the public is to be retained, the Combine must be formed in the daylight of public opinion, thus particulars of his suggested scheme are being circulated, not only to every firm both large and small, but also to most of the recognised Trade Associations in Great Britain, who are in any way interested in the Industry.

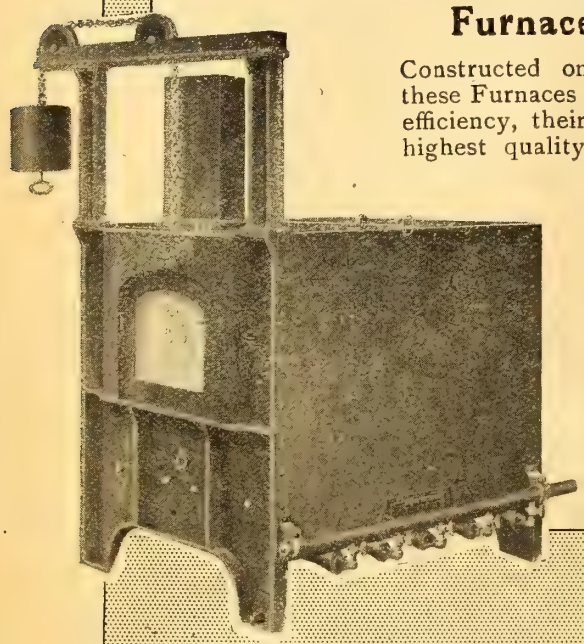
The suggested scheme describes exhaustively the whole process of Syndication from the production point of view, such as the methods of re-shuffling the manufacturing resources of all the firms in the Combine, so that each will specialise on certain classes of products, and also from the selling and distributing point of view, whereby a tremendous amount of wasted effort and overlapping will be entirely eliminated.

The whole question of administration of the work in each factory of the Combine is also discussed, and, finally, the financial side of the scheme is referred to. The proposal is for a 51 per cent. financial merger of all the firms taking part, each firm retaining 49 per cent. only of its own capital. On this principle the profits are to be pooled and allocated and a re-valuation of each firm to be made every three years in order to level up matters in regard to those firms showing initiative and progress, and others which by reason of apathy are not contributing their due proportion to the Combine.

AIDING AIRCRAFT OUTPUT.

In order that they may actively assist in increasing aircraft output Barimar, Ltd., have now arranged that their Special Sheet Metal Department shall be made available for the production of cowls, undershields, tanks, fairings, and panel work of every kind. Aircraft manufacturers who are in need of assistance along these lines would do well to communicate with the offices of Barimar, Ltd., 10, Poland Street, London, W.1.

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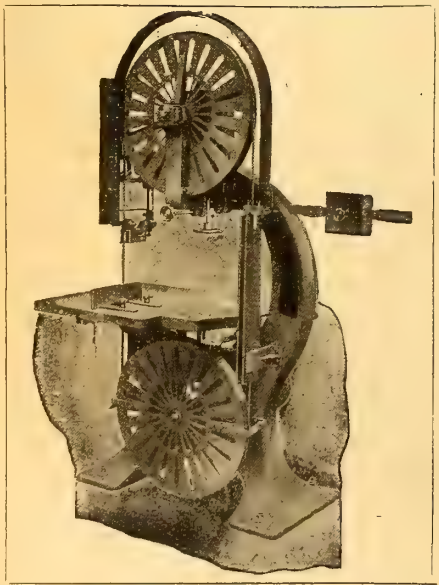
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CURRENT TOPICS.

Cheerfully Active.

Not unnaturally, the calmness on the various battle fronts is translated into greater animation in the Financial World. The monetary position is only slightly disturbed by the usual pressure incidental to the turn of the half-year: the money market is feeding quite contentedly and profitably on War financing, and though there are hints of a possible new War Loan, these are not taken seriously. The Stock Exchange is as cheerful as can be, finding it still an easier matter to sell the generality of securities than to buy them, a state of affairs previously explained herein. All things considered, there is not much about which to complain.

Sweden Aerial Projects.

One is greatly interested, not to say a little concerned, by the further announcement that a Swedish Aerial Service Company has been formed with a capital of 10,000,000 kronor. It is said to be backed, or sponsored, by three important banks, viz., the Stockholm Handelsbank, which has a capital and reserve funds of about £10,000,000; the Skandinaviska Kreditaktiebolag, with a capital and reserve funds of more than £8,000,000; and the Stockholm Enskilda Bank, with a capital and reserves of approximately £4,500,000. Other kindred institutions are actively interested in the venture. Financiers and technical experts are stated to be further considering the subject of establishing the company which, commencing operations after the war is over, is to provide aerial communication in Sweden and elsewhere.

The Early Bird.

It is not easy to appraise this project at its proper value, because we are unacquainted with the ambitions and schemes of its sponsors. In its present embryonic state, and in the absence of any vital details, it will, we suppose, provoke the usual quantity of sneers; and yet, at the same time, it may fructify and conceivably become a certain menace against any essentially British developments in this direction after the war. The policy of *laissez faire* was at one time considered good enough in the political and commercial conduct of Great Britain. Unfortunately there has been a change of opinion, and although we believe that some of our commercial kings are not neglecting the possibilities of aerial transportation, it would nevertheless be quite refreshing to be assured that they are fully alive to the designs of neutrals.

Advantages She Possesses.

Sweden is not to be scoffed at for enunciating her plans. She holds a very important position in the world's maritime industry. The war has enriched her very considerably, so that the question of providing the requisite financing in any projects calculated to enhance her own industrial and commercial aggrandisement will not present any difficulty. Moreover, she will be assisted to a large extent by her banks, which are of the industrial type and designed more to foster industry and trade rather than to conduct a superior form of pawnbroking business like those of this country.

The Capitalisation.

If the capitalisation specified for this projected Swedish venture is accurate—approximately £500,000—one may reasonably infer that either the company-promoting bacillus is virulently active in Sweden, or else that the Swedes intend to "get there first" and just make the most of a very favourable opportunity.

What We Should Like to See.

One thing that the aerial industry can conveniently and conscientiously dispense with, and that is a debauch of company promoting. No new industry ever benefited from that polite form of robbery. It is the promoter of such wild-cat ventures who alone benefits. What we should like to see is a prospectus of the plans and the schemes, the ambitions and the hopes of this Swedish concern. The estimate of profits to accrue, say, from a regular mail and passenger service between Timbuctoo and Vladivostock would make extraordinarily interesting reading. Still, it would be unwise to sneer; Sweden means business.

Aircraft Shares Prominent.

By far the most conspicuous feature of the Stock Markets just now is provided by the shares of companies associated with the Aircraft Industry. Rolls-Royce have risen appreciably, the buying being based on the prospect of an appreciably bigger dividend. We have in a previous issue enlarged on the substantial gain in last year's profits. It is reported that the profits now being made are again appreciably larger. Triumphs have been steadily absorbed in large quantities by provincial buyers who profess to know that the company is doing extraordinary well. Vickers have enjoyed a substantial improvement and so have Armstrong Whitworths.

The Position of Vauxhalls.

There has also been a persistent demand for Vauxhall Motors, and this has forced up the price considerably. The company is known to be turning out 50 per cent. more business than it did last year, because of the new shops and plant now in commission. As the margin of profit is quite reasonable, it is argued that there should be an increase on the 10 per cent. dividend. The shares at 30s. are supposed, therefore, to have speculative possibilities. The company has a capital of £300,000. As it has not been able to submit the usual annual accounts, owing to the delays in settling the amount of liability for Excess Profits Duty and special taxation, its financial position is not public property yet. However, it is assumed that it has been quietly building up reserve funds and providing very generously for depreciation and cost of new plant out of the larger profits earned in the last year or so.

Vickers and a Subsidiary.

Apropos the recent statement herein concerning Vickers, it is of interest to chronicle the fact that the company has been reducing its financial interest in the Wolseley Car Co. This is really a subsidiary to Vickers, who own all the ordinary capital and the seven per cent. preference shares. It is getting rid of some of those preference shares which are being taken up by investors at 21s. or so.

COMPANIES ANNOUNCEMENTS.

NEW COMPANIES REGISTERED.

The files of the following new companies are available for inspection at Somerset House.

Redcliffe Aircraft Co., Ltd.—Private company. Registered June 15th. Capital £5,000 in £1 shares. Manufacturers of wings and parts for the construction of aeroplanes and other things required by the British Government; also to carry on the business of manufacturers of and dealers in furniture, upholstery, etc., and to enter into an agreement with A. E. Newth and others. The subscribers (each with one share) are:—
A. E. Newth, 40, Carnarvon Road, Bristol, wholesale upholsterer.
H. G. Newth, 21, Limerick Road, Bristol, wholesale upholsterer,
S. J. Fildes, 1, Windsor Road, St. Andrews, Bristol, wholesale upholsterer.
G. H. J. Osborne, 63, Manor Park, Bristol, wholesale upholsterer.
H. W. Osborne, 34, Manor Park, Redland, Bristol, wholesale upholsterer.
J. S. Salter, 7, Montrose Avenue, Bristol, wholesale upholsterer.
The first directors are:—A. E. Newth, H. G. Newth, S. J. Fildes, G. H. J. Osborne, H. W. Osborne and J. S. Salter. Registered office: Harford Street, Cathay, Bristol.

Cellon (Richmond), Limited.—Private company. Registered June 13th. Capital, £70,000, in 45,000 and 25,000 7½ per cent. participating cum. pref. of £1 shares. To take over part of the business carried on by Thomas Tyrer and Co., Ltd., at Stratford, E., and at Cellon Works, Richmond, S.W., as manufacturers of aeroplane dope and varnishes for Cellon, Ltd., and part of the business of Cellon, Ltd., relating to the sale of such dope and varnishes, etc. There are agreements to which the above-named companies, A. J. A. Wallace Barr, A. Mond, and T. Tucker are parties.
The subscribers (each with one share) are:—A. J. A. Wallace Barr, 22, Cork Street, W., aeroplane dope manufacturer; R. E. P. Crosscurth, 21, Mincing Lane, E.C.
The first directors are:—A. J. A. Wallace Barr, R. E. P. Grosscurth, and P. H. Chambers. Registered office: 22, Cork Street, London.

Saundevan, Ltd.—Private company. Registered June 22nd. Capital, £1,000 in £1 shares. Manufacturers of fireproofing solutions for various fabrics and fireproof shields for the protection of aviators, etc. The subscribers (each with one share) are:— W. Saunders, 96, Leathwaite Road, S.W., inventor; G. F. Puckle, 85, Gracechurch Street, E.C., solicitor's clerk.
The first directors are:—W. Saunders and E. H. Riches. Registered office: 45-6, Chandos Street, W.C.

Aluminium Pistons in 230 h.p. Benz Engines.

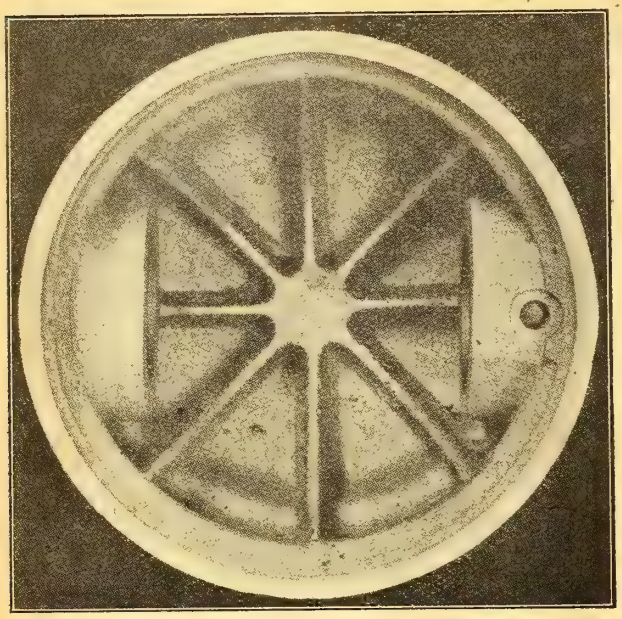


Fig. 1.—Inside View of 230 H.P. Benz Cast-Aluminium Piston.

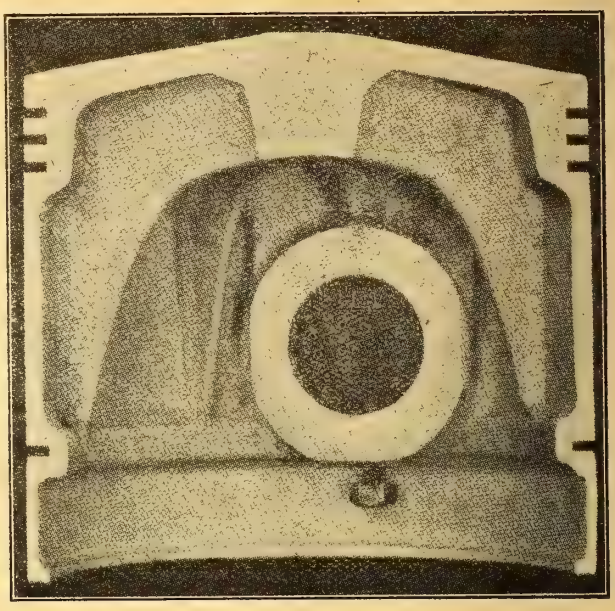


Fig. 2.—Sectional View of Piston showing Formation of Ribs.

The following report is published by courtesy of the Technical Department—Aircraft Production—Ministry of Munitions :—

A 230 h.p. Benz engine, No. 31,560, taken from the Aviatik biplane, G.130, captured on February 12th, 1918, was found to be fitted with aluminium pistons. As these are the first aluminium pistons to be found in a captured enemy aero-engine in service, a detailed report of their design, together with a chemical analysis of the alloy, should be of interest.

The pistons weigh 4lb. 8oz. each, without rings, which weigh 1.5oz. each. The total weight of the complete piston, with rings and gudgeon pin set screw, is 4lb. 14½ozs., as compared with the standard cast-iron piston, which weighs 6lb 11½oz.

The gudgeon pins and connecting rods are of standard Benz design, as also is the rest of the engine to which these pistons were fitted.

The design of the standard cast-iron Benz piston, which is fitted with a conical steel support, riveted to the inside of the piston crown, and which bears upon the centre portion of the gudgeon pin through a slot cut in the connecting rod small end, is well known. Unlike the standard cast-iron piston, the domed head of the sand-cast aluminium piston is supported and strengthened by eight webs radiating from a central boss in the piston crown. The formation and shape of the webs is clearly shown in the photographs and sectional drawings of the piston.

Three cast-iron rings are fitted above the gudgeon pin and one scraper ring is provided below the gudgeon pin. All rings are concentric and are machine hammered on the inside. It will be noticed that the rings are all exceptionally deep in section, being 5.25mm. deep and only 3mm. wide vertically.

The piston ring gap measured in position in a standard 230 h.p. cylinder was found to be exceptionally wide—i.e., 1.9mm.

As may be seen in Fig. 3, the gudgeon pin bosses are fitted with steel bushes 2mm. thick. These are cast into the bosses in the usual way. The gudgeon pins are 38mm. diameter, and the gudgeon pin bosses are 65 mm. diameter. The method of fixing the gudgeon pin by a hexagon headed set screw and split pin is standard Benz practice

An annular semi-circular groove 4.5 mm. radius is machined on the bottom lip of the piston, as shown in the section drawing Fig. 3, and the inside of the skirt is machined inside up as far as the reinforcing rib of the scraper-ring directly below the gudgeon pin.

Further details of the design of these aluminium pistons are shown in the illustrations, and the chemical composition of the alloy from a metallurgical analysis carried out at the Royal Aircraft Establishment is as follows :—

Copper %	6.02
Zinc %	12.13
Iron %	1.42
Silicon	0.31
Tin %	Nil.
Nickel %	Nil
Manganese %	Trace
Magnesium %	Trace

As the engine from which these pistons were taken was found to be too badly damaged to carry out a test, it has been impossible to ascertain the increased relative efficiency between this engine and the standard 230 h.p. Benz. The compression ratio, however, is apparently slightly higher in the engines fitted with the aluminium pistons, and the distance between the top of the piston and the central axis of the gudgeon pin is increased from 70 mm. to 71 mm., which gives approximately 16.51 cubic cms. less in the clearance volume of each cylinder in engines fitted with these aluminium pistons, which gives a compression ratio of 5.0 to 1 instead of 4.94 to 1.

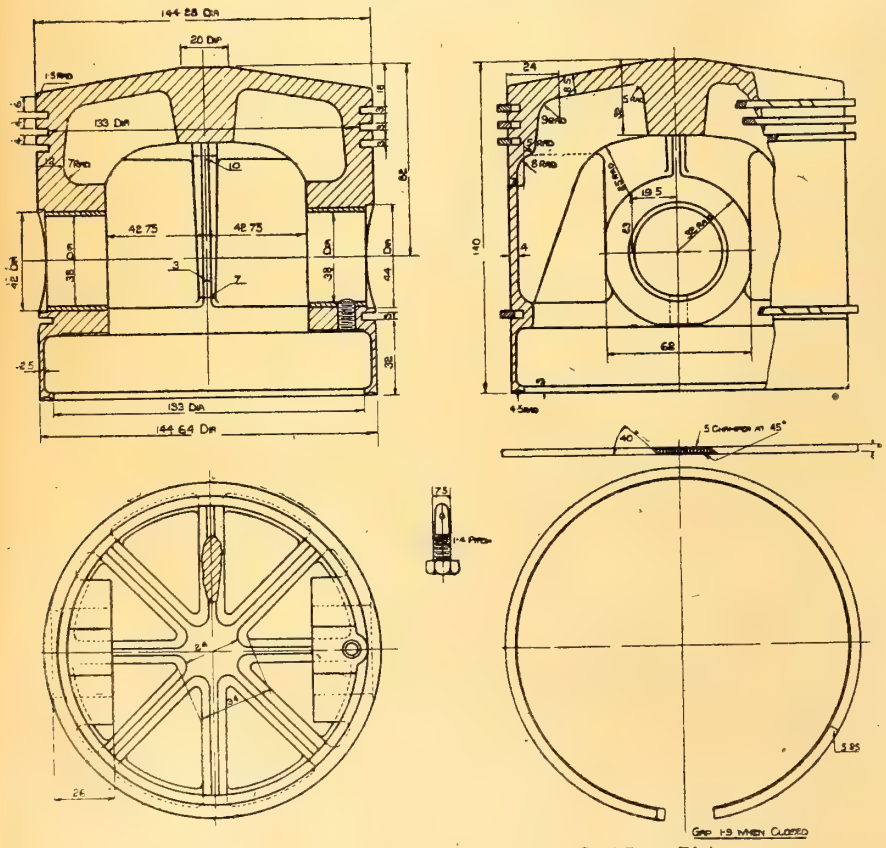
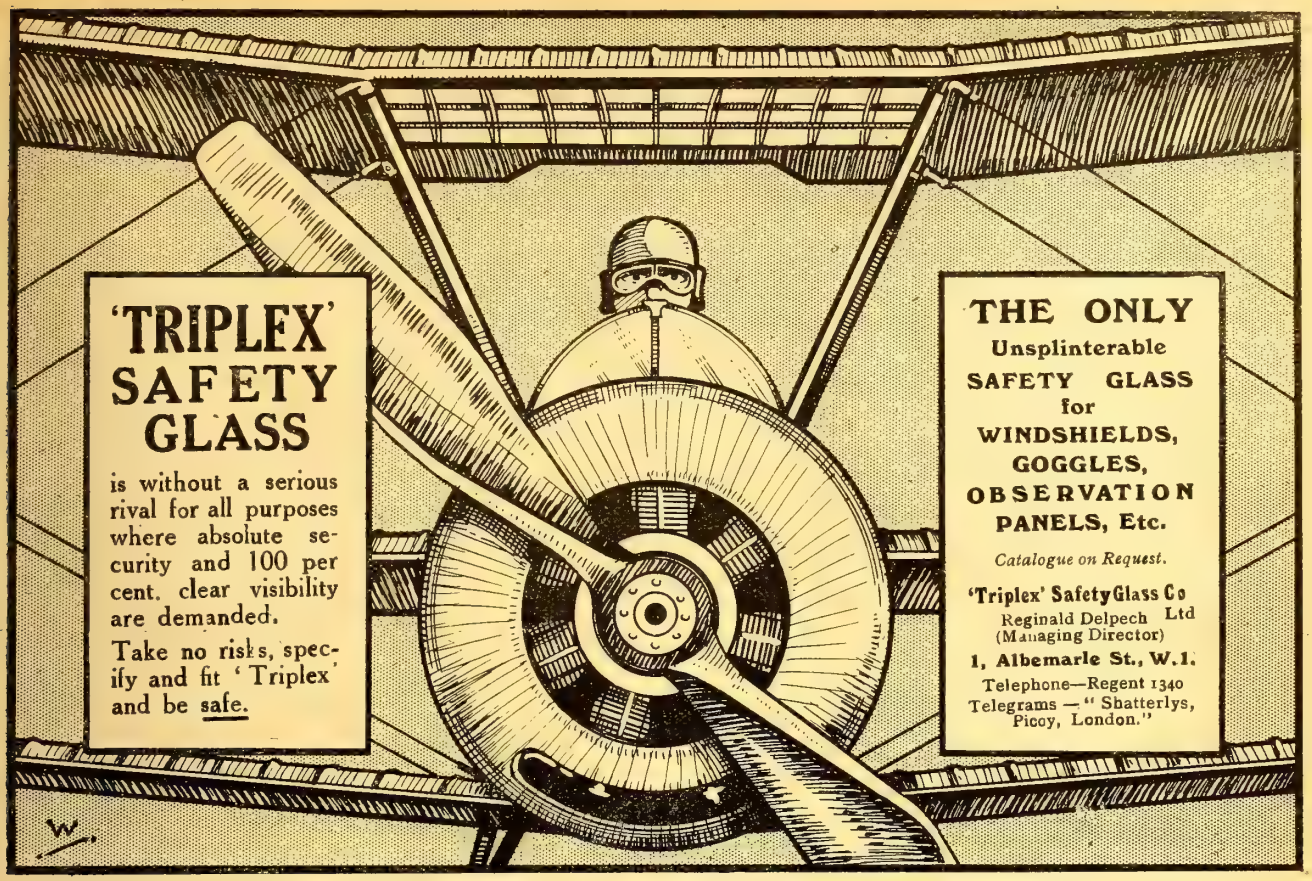


Fig. 3.—Details of 230 H.P. Benz Standard Cast-Iron Piston.



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(*Continued from page 24.*)

Temp. Lt. A. P. KELLY, R.F.C.

When information was urgently needed as to the enemy's position during an action, he carried out a reconnaissance at a low altitude under heavy machine-gun fire. Though wounded he completed his patrol, located the enemy's position, and brought back most valuable information. He showed splendid courage and skill throughout the operations

Temp. Capt. F. M. KITTO, Gen. List and R.F.C.

While engaged in attacking ground targets with machine-gun fire and bombs he observed a large party of troops, amongst whom he dropped the remainder of his bombs with the most excellent results. On a later occasion he attacked a formation of enemy scouts, and having caused one of these to crash to the ground, he pursued another and attacked it 11 miles behind the enemy's lines, bringing it to the ground and destroying it. In addition to these he has shot down two other hostile machines, and has shown throughout the greatest determination and dash.

Lt. A. KOCH, R.F.C.

During 10 days' operations he carried out 11 reconnaissances at low altitudes. He continually attacked and disorganised enemy troops and transport, and on one occasion he dispersed a battalion of enemy infantry which was marching along a road. On a later occasion, after he had completed a reconnaissance and bombed an enemy position, he was attacked by an enemy patrol. Though his tanks were pierced, and he was wounded, he succeeded in flying his machine back to the aerodrome. He showed splendid courage and initiative.

Temp. Sec. Lt. A. E. LANCASHIRE, Gen. List and R.F.C.

During a flight, lasting for over two hours, carried out at a height of 700 ft., he performed a very accurate contact patrol at a critical period, obtaining the most valuable information concerning the enemy's dispositions. He also engaged many batteries and infantry with machine-gun fire, and throughout, by his courage and keenness, he set a fine example to all ranks.

Lt. E. G. LEAKE, Manch. R. and R.F.C.

On one occasion observing a hostile scout, he at once attacked and fired 1,000 rounds at close range. The hostile machine went down in a steep glide and crashed to earth. Later, when on contact patrol, his machine was damaged, and forced to land just behind our lines. Although under heavy shell fire he, assisted by another officer, succeeded in salving all the instruments and equipment on the machine before destroying it. He has set a very high example of courage and devotion to duty throughout the operations.

Lt. R. D. LEIGH-PEMBERTON, G. Gds. and R.F.C.

On one occasion he bombed enemy infantry from a height of 500 ft., and attacking them continuously with machine-gun fire scattered them. While he was returning for a fresh supply of bombs and ammunition both his petrol tanks were shot through and he was forced to land some distance in rear of the enemy's advanced line. He, together with his observer, successfully evaded the enemy's patrols and eventually reached our infantry. He has also destroyed one hostile scout and has sent down another out of control. Throughout the operations he set a very fine example of dash and gallantry.

Lt. (temp. Capt.) C. M. LEMAN, R.G.A. and R.F.C.

While on a low-flying bombing patrol he, by a direct hit from a bomb, put out of action a hostile battery and silenced another by machine-gun fire. The enemy fire was so intense that he was forced to land in front of the enemy's advanced line, whence he returned to make his report after leaving his machine a total wreck. He has on many occasions created great havoc as a result of bombing and attacking with machine-gun fire batteries in action, enemy transport, and infantry, inflicting very heavy casualties on them. His skill and gallantry have been most marked.

Temp. Sec. Lt. E. LINDUP, Gen. List and R.F.C.

During the recent operations, when bombing troops on roads from low altitudes, he was attacked by three hostile triplanes, one of which he shot down, finally driving off the remaining two. Though all his lateral controls were shot away, he succeeded in landing his machine at his aerodrome. On a later occasion, whilst on photographic work, when his machine was badly damaged by anti-aircraft fire, he succeeded in landing it behind our lines. He has destroyed one enemy machine and shot down out of control four others. His services have been characterised by gallantry and determination.

Temp. Sec. Lt. H. P. LLOYD, Gen. List and R.F.C.

During an offensive patrol he dropped bombs on motor transport, one lorry being completely destroyed and others damaged. Enemy troops advancing to the attack were then engaged with machine-gun fire, which inflicted numerous casualties on them. Later he bombed an enemy battery coming into action, the horses of which bolted, a great number of the gun detachments being killed. He has on all occasions shown the greatest pluck and determination in carrying out any task allotted to him.

Lt. R. M. C. MACFARLANE, R.F.A. and R.F.C.

During a flight, lasting for over two hours, carried out at a height of 700 ft., he performed a very accurate contact patrol at a critical period, obtaining the most valuable information concerning the enemy's dispositions. He also engaged many batteries and infantry with machine-gun fire, and throughout by his courage and keenness he set a fine example to all ranks.

Temp. Sec. Lt. W. G. MACKENZIE, Gen. List and R.F.C.

While on a contact patrol he saw the enemy launch an attack in force. He dropped bombs on the enemy reserves, causing many casualties. He then attacked the advancing enemy, flying just above their heads and killing a large number of them. When his ammunition was exhausted, he returned and made a valuable report. He showed magnificent courage and determination throughout the operations.

Temp. Sec. Lt. D. R. MACLAREN, Gen. List and R.F.C.

On one occasion, when on low bombing work, he bombed a long-range enemy gun 9,000 yards behind the lines, obtaining from a height of 200 ft. two direct hits on the gun truck and two on the railway track alongside. When returning to our lines he encountered a hostile two-seater machine, which he shot down crashing to earth. He then attacked a balloon, which burst into flames, and, finally, observing another enemy two-seater plane, he engaged it and eventually succeeded in crashing it to earth. He has set an example of gallantry and skill to his squadron.

Sec. Lt. E. R. MADDOX, Hamps. R., attd. F.R.C.

During an enemy attack he repeatedly dived to a very low altitude and engaged the enemy troops with bombs and machine-gun fire. The enemy were in massed formation, and sustained very heavy casualties. On numerous occasions during the recent operations he has inflicted very heavy casualties, and caused the greatest panic among enemy troops and transport by the daring manner in which he has employed his bombs. His gallantry and skill have been most praiseworthy.

Temp. Sec. Lt. F. P. MAGOUN, Gen. List and R.F.C.

When engaged on bombing work he attacked and shot down an enemy machine, with the result that it crashed to earth. He has also engaged massed enemy troops and transport with machine-gun fire from low altitudes, throwing the enemy into the utmost confusion and inflicting heavy casualties. His work has been carried out with consistent keenness and tenacity.

Temp. Capt. C. J. MARCHANT, Gen. List and R.F.C.

He, with two other pilots of his squadron, bombed a freight train from a height of 50 ft., three trucks being derailed. Again, on a later occasion, he, with five other pilots, bombed and fired at a column of enemy transport with such good effect that three-quarters of the personnel became casualties and most of the vehicles were destroyed. Whilst on a low bombing reconnaissance during the recent operations he brought down two hostile two-seater machines out of control and shot down a third in flames. He has at all times displayed marked gallantry and resource.

Temp. Sec. Lt. R. T. MARK, Gen. List and R.F.C.

He showed great determination and resource during operations in attacking enemy troops and transport with machine-gun fire. Observing some enemy transport in a village, he attacked it repeatedly and caused it to stampede. While on an offensive patrol he attacked and destroyed an enemy two-seater machine. He has destroyed one other enemy machine and driven down others out of control.

Lt. (Temp. Capt.) R. S. MCCLINTOCK, R.F.A. and R.F.C.

On one occasion he shot down two enemy machines, and on the following day he attacked and shot down a hostile two-seater machine at a height of 100 ft. He has led upwards of 40 patrols and has performed much valuable work on low-flying reconnaissance and bombing patrols. As a flight commander he has been untiring in his care of personnel and machines, and as a patrol leader he has displayed the greatest courage and resource.

Lt. (temp. Capt.) N. C. MILLMAN, R.F.C., Spec. Res.

Whilst on offensive patrol, he encountered a hostile formation of 12 machines. He led his patrol in such brilliant fashion that five of the enemy machines were shot down either in flames or out of control, two of these being accounted for by himself and his observer. Previously to this, he had carried out voluntarily a reconnaissance, from which he succeeded in returning with most valuable information, despite the fact that he had been heavily engaged by machine-gun fire during the greater part of the flight. Later, he commanded a formation on one flank of the attack during a daylight bombing raid on a hostile aerodrome, and carried out his task in a most dashing and successful manner. He has at all times displayed powers of leadership of the highest order.

Sec. Lt. W. H. G. Milnes, R. War. R. and R.F.C.

When on a bombing raid at a height of 800 ft., he was attacked by four enemy two-seater machines, and by skilful manœuvring enabled his observer to destroy one of them. In the course of five days' operations he dropped nearly a ton of bombs on enemy troops, camps, and railways from a low altitude, and also used his machine-gun with good effect. He did excellent photographic work, and carried out several valuable long-distance reconnaissances. He always showed great courage and resource.

Temp. Sec. Lt. C. G. D. Napier, Gen. List and R.F.C.

On one occasion during a low-flying bombing attack he descended to a height of 100 ft. and dropped four bombs amongst a body of enemy troops, causing heavy casualties and scattering the enemy in all directions. Later, whilst on offensive patrol, he observed an enemy two-seater and two scouts. He fired twenty rounds at the two-seater, with the result that it crashed, and then attacked one of the scouts, which turned over completely, and finally went down in a vertical nose-dive. In all he has to his credit two enemy machines crashed and four driven down out of control. He has displayed the greatest judgment, determination and daring.

Lt. (temp. Capt.) D. H. Oliver, Gen. List and R.F.C.

He carried out a most successful reconnaissance, flying at a height of 500 ft. under heavy fire. Despite the fact that his machine had received a direct hit from a shell he succeeded in landing it at the aerodrome and brought back information of the greatest value. On the following day he carried out at a low altitude patrol under heavy machine-gun and rifle fire and obtained valuable information. His gallantry and determination have been most marked.

Temp. Capt. W. H. Park, R.F.C.

He undertook a long-distance reconnaissance under the most adverse conditions, and though several other machines were compelled to abandon the attempt he by his persistence completed his task and returned with valuable information. He is a patrol leader of the highest order, and his consistent gallantry and valuable services cannot be too highly praised.

Temp. Sec. Lt. H. B. Pett, R.F.C.

He showed great courage and skill while engaged on reconnaissances and contact patrols during operations, flying at very low altitudes under heavy rifle and machine-gun fire. On many occasions he located the enemy's line by deliberately drawing their fire from the ground. On one occasion he made a reconnaissance of a whole corps front in very bad weather, which made it necessary for him to fly at a height of 350 ft. He was continuously under very heavy fire, but completed his reconnaissance and obtained valuable information.

Temp. Sec. Lt. M. H. Picot, R.F.C.

The information which he has brought back has been accurate and of the greatest value. In order to obtain such information he has been compelled to fly at very low altitudes, where he has been subjected to intense machine-gun and rifle fire. On one occasion, when the situation on the corps front was very obscure, he gained most valuable information by flying very low, but was compelled to return on account of his machine being riddled with bullets. He at once went up in another machine and completed his reconnaissance. His courage, persistence, and good service have been most marked.

Temp. Sec. Lt. G. Pilditch, Gen. List and R.F.C.

He engaged the enemy massed ready for an attack from a height of 300 ft., using up all his ammunition and scattering the enemy in all directions, inflicting very heavy casualties. Previously to this he had dived and fired on a hostile battery until he had silenced it, and had also destroyed an enemy triplane and a two-seater machine. His work has been of the highest order, and he has shown the greatest courage and energy in attacking ground targets.

Lt. (temp. Capt.) T. L. Purdom, K.O.S.B. and R.F.C.

He attacked and shot down a hostile scout, and when himself attacked by a second scout, he shot the latter down out of control also. He has in addition to these destroyed four enemy machines within a month. He has shown the most exceptional gallantry and daring in engaging enemy aircraft.

Temp. Sec. Lt. H. B. Redler, Gen. List and R.F.C.

He encountered four enemy two-seater machines, and attacking the lowest drove it to the ground with its engine damaged. Later, he attacked one of five enemy two-seater machines, and drove it down out of control. He has destroyed in all three enemy machines and driven three others down out of control. He continually attacked enemy troops and transport from a low altitude during operations, and showed splendid qualities of courage and determination throughout.

Temp. Sec. Lt. J. H. Reeves, Gen. List and R.F.C.

For conspicuous gallantry and devotion to duty in attacking enemy troops on the ground and in carrying out contact patrol work during operations. On one occasion he flew for two hours at a very low altitude, sometimes at only 50 ft., attacking enemy troops and transport. He was eventually severely wounded, but brought his machine back safely. He consistently showed great coolness and resource.

Temp. Sec. Lt. H. B. Richardson, Gen. List and R.F.C.

While on patrol he attacked a formation of eight enemy aeroplanes, one of which he destroyed. On another occasion he engaged two enemy two-seater machines, and destroyed one of them. He has destroyed six enemy machines, and driven down five others out of control, and has done valuable work in attacking enemy troops on the ground. He consistently displayed great courage and skill.

Lt. J. T. Richardson, Durh. L.I. and R.F.C.

During one night he made three successive flights over the enemy's lines, dropping a large number of bombs on transport and attacking ground targets with machine-gun fire. He has carried out upwards of 60 night-bombing raids, and has himself dropped over five 'ons of bombs. By his keenness and skill as an observer he has been of the greatest assistance to the pilots with whom he has flown.

Lt. H. A. Rigby, R.F.C., Spec. Res..

He has carried out many low-flying bombing raids, obtaining direct hits on enemy troops, hutments, and camps. On one occasion, after attacking a large column of enemy infantry on a road with machine-gun fire, he attacked and shot down in flames a hostile scout. His work has always been carried out with the utmost keenness and determination.

Temp. Lt. C. C. Robson, R.F.C.

He completed a long-distance reconnaissance under very trying weather conditions, and succeeded in returning with the most valuable information. He has shown himself to be very cool and resourceful under all circumstances.

Lt. G. H. H. Scutt, Gen. List and R.F.C.

He has destroyed one hostile machine and driven down three others out of control. He carried out an important single-machine reconnaissance, frequently descending to a height of 100 ft. under heavy rifle and machine-gun fire and obtained valuable information. While returning he attacked five enemy machines, and ably assisted his pilot in driving them back over their lines. He has carried out many successful photographic reconnaissances, and has at all times proved himself to be a keen and daring officer.

Lt. H. W. Sellars, R.F.C., Spec. Res.

Whilst on offensive patrol, he attacked a hostile two-seater machine, which dived vertically and eventually crashed. Having attacked another two-seater machine, which dived down over the enemy's lines, he engaged three hostile scouts at the nearest of which his observer fired two bursts at 75 yards range, causing the enemy machine to crash down in flames. His skill and gallantry have been most marked.

Temp. Sec. Lt. W. E. Staton, Gen. List and R.F.C.

On one occasion, when on offensive patrol, he, by the skilful handling of his machine and accurate shooting destroyed two enemy aeroplanes and brought down a third out of control. In addition, during the nine days previous to this, he had destroyed five other enemy machines, two of these being triplanes. The services which he has rendered have been exceptionally brilliant, and his skill and determination are deserving of the highest praise.

Lt. (temp. Maj.) F. W. Stent, R.F.C., Spec. Res.

He attacked and brought down a hostile two-seater, the observer of which was in a position to give the enemy valuable information of our movements. On another occasion he encountered and brought down an enemy two-seater, wounding both pilot and observer, who were made prisoners. On both occasions he showed great gallantry and ability.

Temp. Sec. Lt. W. S. Stephenson, Gen. List and R.F.C.

When flying low and observing an open staff car on a road, he attacked it with such success that later it was seen lying in the ditch upside down. During the same flight he caused a stampede amongst some enemy transport horses on a road. Previous to this he had destroyed a hostile scout and a two-seater plane. His work has been of the highest order, and he has shown the greatest courage and energy in engaging every kind of target.

Lt. E. E. Stock, Gen. List and R.F.C.

During an engagement he bombed enemy troops who were approaching a bridge and caused great confusion among them. He then attacked, with machine-gun fire from a very low altitude, the troops, who were endeavouring to cross the bridge. Diving on to several parties of the enemy who remained on the bridge in a state of indecision, he almost completely annihilated

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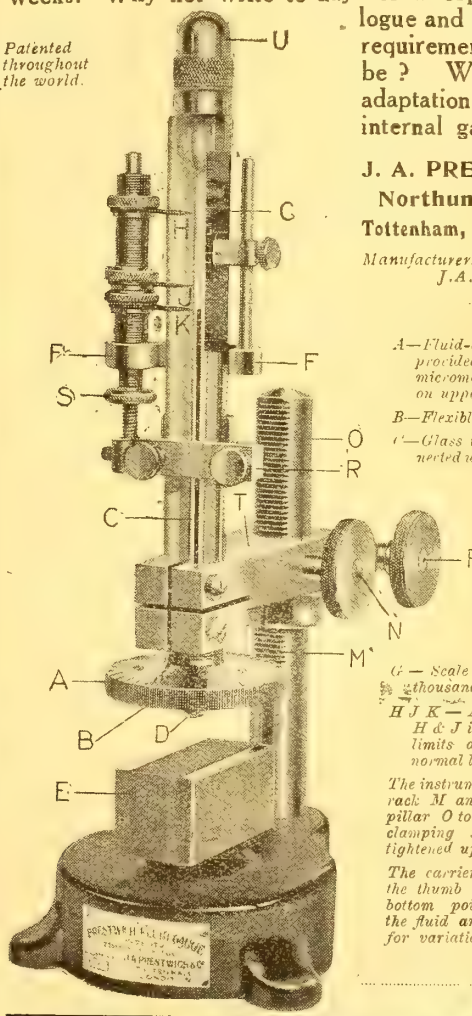
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E—Fixed anvil.

F—Carrier provided with scale and three adjustable pointers

G—Scale indicating ten-thousandths of an inch.

H J K—Adjustable pointers. H & J indicate the tolerance limits and K is set to the normal level of fluid in tube.

The instrument is roughly set by rack M and pinion N on the pillar O to suit the article, the clamping screw P is then tightened up.

The carrier F is adjusted by the thumb nut S to keep the bottom pointer K level with the fluid and thus compensates for variations of temperature.

them. His action undoubtedly hampered the enemy by making the bridge impassable for half an hour. On numerous other occasions he disorganised and hindered the enemy's advance by his attacks on troops and transport. He has destroyed three hostile machines, and has always set an excellent example of courage and enterprise.

Temp. Capt. T. K. Twist, Gen. List and R.F.C.

On several occasions he has successfully carried out observations on hostile batteries, has under the most adverse weather conditions bombed and engaged with machine-gun fire hostile troops and transport, and has on twelve occasions fought and driven away superior numbers of enemy machines, two of which he succeeded in bringing down out of control. He has at all times set a most magnificent example of dash and daring, and has accomplished most valuable and successful work.

Lt. T. H. Upfill, R.F.A., Spec. Res. and R.F.C.

On one occasion, observing a hostile scout, he at once attacked and fired 1,000 rounds at close range. The hostile plane went down in a steep glide and crashed to earth. Later, when on contact patrol, his machine was damaged and forced to land just behind our lines. Although under heavy shell fire, he, assisted by another officer, succeeded in salving all the instruments and equipment on the machine before destroying it. He has set a very high example of courage and devotion to duty during the recent operations.

Temp. Sec. Lt. E. R. Varley, Gen. List and R.F.C.

Observing two enemy two-seater machines he, by skilful piloting, obtained a position under the tail of one and opened fire at close range, with the result that the hostile plane fell out of control and crashed. On two later occasions he attacked and destroyed two other hostile machines, the pilot of one being taken prisoner. He has also shown great dash in attacking enemy balloons and hostle troops on the march, and has displayed marked gallantry throughout.

Temp. Capt. S. W. Vickers, Gen. List and R.F.C.

He has taken part in 53 night-bombing raids on enemy aerodromes, billets, and communications, flying at times in most unfavourable weather and in the face of intense rifle and machine-gun fire. On two occasions he made three flights in one night, reaching his objective on each occasion and doing considerable damage with direct hits. He has set a splendid example of courage and determination to the rest of his squadron.

Sec. Lt. G. G. Walker, N. Lan. R. and R.F.C.

On one occasion he assisted in an attack on enemy transport, dropping eight bombs and firing 300 rounds into its midst, with the result that several limbers were completely destroyed and severe casualties inflicted on the enemy. Later in the same day he again attacked enemy transport, causing a stampede amongst the horses and inflicting many casualties. Whilst returning to his aerodrome he attacked with machine-gun fire two hostile machines in action, firing 400 rounds into their midst. His pluck and determination were beyond all praise.

Temp. Sec. Lt. W. E. Warden, Gen. List and R.F.C.

When on a low-flying patrol he attacked seven hostile scouts, one of which he succeeded in sending crashing to earth. Previous to this he had attacked and sent down out of control another hostile scout. He has also brought back accurate and valuable information regarding hostile movements, and has flown at very low altitudes in order to engage enemy troops, guns, and transport. His skill, determination, and courage have been most marked.

Temp. Capt. E. Waterlow, Gen. List and R.F.C.

He carried out two long reconnaissances, flying at a very low altitude, and brought back most valuable information. During one of these flights he was attacked by a hostile scout, which he destroyed. He has carried out four exceptionally long flights, during each of which he took a great number of photographs. He has always undertaken himself the longest and most arduous operations given to his flight, and by his skill, gallantry, and determination has on each occasion completed his task with the greatest success.

Lt. (temp. Capt.) F. G. C. Weare, E. Kent R. and R.F.C.

In the course of eight days' operations he destroyed two enemy machines, drove down one out of control, and enabled his observer to destroy two others. During an earlier engagement he carried out two valuable reconnaissances at a low altitude. He showed a splendid fighting spirit and displayed great skill and judgment in leading his formation.

Temp. Sec. Lt. E. T. Wells, Rif. Brig., attd. R.F.C.

While he was flying over the enemy's lines the petrol tank of his machine was shot through, and immediately afterwards the left aileron was shot away. The machine was side-slipping out of control towards the enemy's position, and the pilot tried in vain to turn it back to our lines. With great presence of mind he climbed out on to the right wing, and brought the machine to an even keel, enabling the pilot to land it 100 yards behind our front line. But for his great coolness and resource the machine would undoubtedly have crashed to earth in the enemy's lines. He has done excellent work on many occasions, and has obtained much valuable and accurate information.

Temp. Sec. Lt. H. Wisnekonitz, R.F.C.

On one occasion, during a very thick mist, he and his pilot, by flying very low, despite very heavy machine-gun fire, succeeded in locating the enemy's position. Though their machine was hit in all the vital parts, it was flown back to the aerodrome in safety. On a later occasion, when on contact patrol, during failing light they succeeded in locating accurately the position of the enemy. They have shown the utmost gallantry and skill during recent operations, and have carried out their duties with the greatest courage and determination.

Canadian Force.

Lt. J. E. Hanning, Engrs. and R.F.C.

When as observer on patrol he was endeavouring to shoot down a hostile balloon, he was at once attacked by a hostile scout. Although his machine-gun was on two occasions put out of action, and though he himself was wounded in the leg, he succeeded in firing a long burst into the enemy machine, the pilot of which collapsed in his seat, his machine spinning to the ground. The controls of his own machine were so badly damaged that his pilot could not fly it. He therefore fitted a dual control, and succeeded in bringing the machine back to our lines and landing it safely. His great courage, skill, and determination undoubtedly saved his pilot's life.

Lt. H. R. Kincaid, Infy. and R.F.C.

On one occasion he succeeded in completing a very long-distance reconnaissance over the enemy's lines, under the most difficult conditions, and returned with information of the greatest value. He has performed most efficient work on photographic reconnaissances during the recent operations, the work being carried out on several occasions at very low altitudes.

Lt. J. E. Pugh, Can. Loc. Forces and R.F.C.

He carried out 20 successful bombing raids and 15 long-distance photographic reconnaissances, showing great determination in carrying out his work, in spite of strong opposition by enemy aircraft. In two days he took 108 photographs in the course of long-distance flights. During a period of five days he dropped three-quarters of a ton of bombs on enemy troops and transport, and engaged ground targets with machine-gun fire from a low altitude. On one occasion whilst on a bombing raid he was attacked by five enemy machines, one of which he destroyed. He set a splendid example of skill and resource.

Lt. F. H. Taylor, Cent. Ont. Regt., attd. R.F.C.

On one occasion, whilst on offensive patrol, he shot down a hostile scout in flames and a second out of control. On the following day he shot down an enemy triplane, which finally crashed to earth. During the recent operations he has carried out many successful attacks on enemy infantry from low altitudes, and has taken part in over 80 offensive patrols. His gallantry and good service merit the highest praise.

Australian Imperial Force.

Lt. J. R. Gordon, Aust. F.C., attd. R.F.C.

An observer on an offensive patrol he shot down and destroyed three hostile machines. Previous to this he had shot down two enemy triplanes, one of which crashed to the ground in flames. He has also effectively and repeatedly scattered massed bodies of enemy troops by accurate shooting from a height of 100 ft. His skill and daring have been of the highest order.

Lt. (temp. Capt.) G. F. Malley, Aust. F.C., attd. R.F.C.

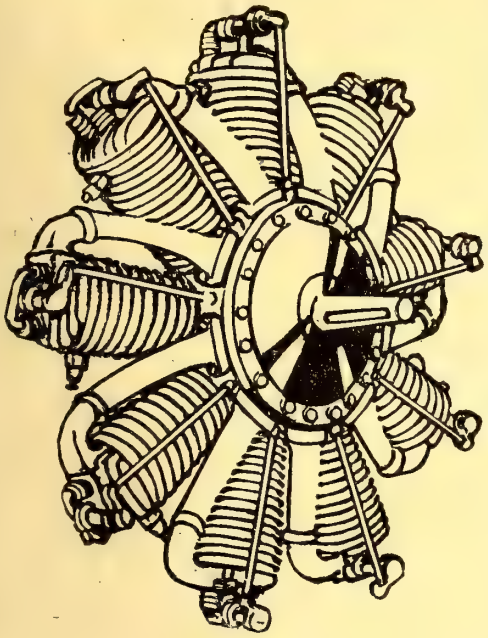
When on offensive and low-flying patrol he attacked one of two hostile scouts, which eventually turned over and fell out of control, being seen to crash by another pilot. Later, a general engagement ensued with four enemy scouts, one of which he attacked, with the result that it fell completely out of control and crashed. Prior to this occasion he had also shot down out of control another hostile machine. His courage and able leadership have resulted in his patrol carrying out excellent work under the most adverse conditions.

Lt. A. E. Robertson, Aust. F.C., attd. R.F.C.

When carrying out a low-flying bombing patrol, he observed a hostile triplane, accompanied by three scouts. He fired a burst of 30 rounds at very close range, and the hostile plane turned over on its side and crashed. Then, seeing an enemy scout below him, he fired 20 rounds into its cockpit, and it fell down vertically out of control. In addition to these, he has shot down one other enemy machine, which finally crashed to earth. His dash and daring have been at all times most marked.

Lt. F. J. Scott, F.C., attd. R.F.C.

After carrying out a bombing attack, he observed an enemy plane, into which he fired 80 rounds. The hostile plane turned on its back and crashed to earth. Four days previous to this he had destroyed an enemy two-seater machine, and had sent down out of control a hostile scout. In addition to these, he has destroyed another hostile two-seater machine. He has displayed marked courage and determination.



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War Office, June 23rd.

Corrigenda.—The following is the correct description of an Officer upon whom a reward has recently been conferred:—Sec. Lt. L. A. Powell, M.C., Glouc. R., attd. R.F.C. (Bar to M.C. gazetted Dec. 17th, 1917.

The deed for which the award of the M.C. was gazetted to Sec. Lt. (temp. Lt.) F. W. H. Thomas, Yeo. and R.F.C., is cancelled, and the following substituted:—"For conspicuous gallantry and devotion to duty. While returning from a bombing raid he was attacked by four hostile machines, one of which he succeeded in bringing down. He was then severely wounded, and on two occasions lost consciousness. He nevertheless successfully brought his machine back and landed it undamaged on his aerodrome. His pluck and determination were worthy of the highest praise. (M.C. gazetted with deed March 7th).

War Office, June 25th.

Regular Forces.—Establishments.—R.F.C.—Mil. Wing.—The following appts. are made:—Flying Officers.—Temp. Sec. Lts. (on prob.), Gen. List, and to be confirmed in their rank:—G. N. Wilton, Sept. 13th, 1917; E. McIver, Feb. 26th; U. Finch, March 7th; W. R. Coventry, H. P. Stewart, March 25th; W. E. Clemens, N. S. Macleod, March 26th; A. D. McBride, March 29th.

Flying Officers (Obsrs.).—Lt. C. T. Repton, Yeo., T.F. (March 15th, seny. Sept. 16th, 1916); Lt. L. McC. Ritchie, N. Brunswick R., Canadian Exped. Force (Feb. 26th, seny. Jan. 4th).

Asst. Instr. in Gunnery (Graded as an Equipt. Officer, 2nd Cl.).—Temp. Sec. Lt. C. E. Hodges, Gen. List, from an Asst. Instr. in Gunnery (graded as an Equipt. Officer, 3rd Cl.), and to be temp. Lt. whilst so empld., March 10th.

Adjt.—The appt. of Lt. D. G. Nairn, A.S.C., T.F., notified in "Gazette" of April 23rd, is cancelled.

Park Comdr.—Lt. D. G. Nairn, A.S.C., T.F., and to be temp. Maj. while so empld., Feb. 7th.

Equipt. Officers, 3rd Cl.—Temp. Sec. Lts. (on prob.), Gen. List, and to be confirmed in their rank:—C. Lyons, Feb. 1st; S. G. Shead, Feb. 7th; C. W. O'Brien, March 28th.

Gen. List.—G. W. Colmer, late temp. Lt., to be Hon. Lt., Feb. 27th; Temp. Sec. Lt. J. B. Mawdsley relinquishes his commn. to join Canadian Forestry Corps, and is granted the hon. rank of Sec. Lt., March 28th.

To be temp. Sec. Lts.:—Pte. T. E. Gibbs, from Middx. R., T.F., March 8th; Pte. R. F. Hacon, from M.G. Corps, March 11th; Pte. J. A. Barber, from M.G. Corps, March 17th; Serjt. R. J. Mayer, from Yeo., T.F., March 19th; Spr. J. K. McGregor, from R.E., March 22nd.

The follg. actg. Serjts. from Canadian Ammn. Sub. Park, to be temp. Sec. Lts. (on prob.):—S. C. Paice, Jan. 8th; W. G. Watson, R. S. Warwick, Jan. 18th; W. Endersby to be temp. Sec. Lt. (on prob.), March 27th.

Air Ministry, June 25th.—

R.A.F.—The follg. temp. appts. are made at the Air Ministry:—

Staff Officers, 1st Cl.—And to retain their temp. rank whilst so empld.:—Maj. (temp. Lt.-Col.) H. C. T. Langdon, Capt. (temp. Lt.-Col.) R. P. Williams, May 15th.

Staff Officers, 2nd Cl.—And to be temp. Majs. whilst so empld. if not already holding that rank:—Capt. (temp. Maj.) J. McIntyre, May 15th; Capt. C. H. S. Taylor, June 5th.

Staff Officers, 3rd Cl.—And to be temp. Capts. whilst so empld. if not already holding that rank:—G. D. Pryor (Maj., Cambs R.), and is granted a temp. commn. as Maj., April 29th; Capt. S. J. A. Beale, Lt. (temp. Capt.) G. G. Fairbairn, May 15th, (Q.) Lt. E. N. Layton, May 20th; (Air) J. P. Flynn (temp. Lt., Ches. R.) is granted a temp. commn. as Lt., May 22nd.

Staff Officers, 4th Cl.—Lt. G. Purvis-Russell-Balfour-Kinnear, April 30th. (Substituted for notification in the "Gazette," May 21st.)

The follg. temp. appts. are made:—

Director.—Lt.-Col. E. M. Maitland, D.S.O., and to be temp. Brig.-Gen. whilst so empld., April 1st.

Staff Officer, 2nd Cl.—Lt. (temp. Capt.) S. G. Rome, M.C., and to be temp. Maj. whilst so empld., May 21st.

Staff Officer, 3rd Cl.—Lt. (temp Capt.) L. Henshall, and to retain his temp. rank whilst so empld., June 10th

Flying Branch.—Maj. P. Babington, M.C., to be temp. Lt.-Col. whilst empld. as Lt.-Col (A. and S.), June 14th.

Capt. (temp. Maj.) E. W. Powell to be temp. Lt.-Col. whilst empld. as Lt.-Col. (A. and S.), June 17th.

Lts. to be temp. Capts. whilst empld. as Capts. (A. and S.):—A. H. Curtis, June 5th; W. B. Green, F. W. Lowen, June 9th; (Hon. Capt.) T. A. Gladstone, June 10th; H. A. Patey, June 11th; M. V. McKeen, June 16th.

Lt. J. S. Gifford to be temp. Capt. whilst empld. as Capt. (K.B.) June 16th.

Lt. H. E. Freeman-Smith to be Lt. (K.B.), from Obsr., April 15th.

Lts., Obsr. Officers, to be Lts. (A. and S.):—W. S. V. Oliver, D. J. Stewart, April 20th; S. E. Storrar, April 21st; R. W. Rose, April 22nd; W. Guy, E. C. Booker, April 23rd; R. O. C. MacDonald, M.C., April 25th; J. S. Cassells, M.C., April 26th; E. Wilson, M.C., April 27th; L. M. Quelch, April 28th; W. P. Bunt, April 29th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A. and S.):—F. D. Chappell, April 16th; E. B. Jones, A. H. Ashton, R. Fawcett, G. Crocker, April 18th; H. J. Marshall, R. C. Iles, C. Dixon, April 19th; R. R. E. Dimmick, R. McL. Dunn, April 20th; H. Hudson, F. J. Griffiths, A. J. S. Winton, L. Barron, S. A. Gulliver, April 22nd; C. Wilson, M. Dawson, A. Manders, April 23rd; W. H. Gann, E. J. Taylor, April 24th; J. Harris, C. Roper, A. E. Gammon, W. Hornby, April 25th; R. M. Guiney, April 26th; F. W. Morgan, April 27th; G. A. Madin, D. D. M. Eastwood, G. A. Richardson, S. Scott, April 28th; A. E. V. Sadd, D. C. Evemy, April 29th; G. H. Collins, P. H. B. Wood, L. G. Farrant, C. L. Theobald, C. G. Burnip, April 30th.

Sec. Lt. I. Carr (late Spec. Res., R.F.C., on prob.) is confirmed in his rank as temp. Sec. Lt. (A. and S.), April 23rd.

The follg. are granted temp. commns. as Sec. Lts. (A. and S.): W. S. B. Walker (temp. Lt., R.W. Fus.), and to be Hon. Lt., April 18th; R. E. C. Spencer (Lt., Wilts. R., Spec. Res.), and to be Hon. Lt.; J. H. Paterson (Lt., I.A.R.O.), and to be Hon. Lt.; L. R. Wheeler (temp. Lt., Br. W.I.R.), and to be Hon. Lt., April 20th; S. E. V. Quin (Lt., Welsh R.), and to be Hon. Lt.; E. M. Prichard (temp. Sec. Lt., attd. R.W. Fus.), April 22nd; S. B. Moir (temp. Lt., R.E.), and to be Hon. Lt., T. C. Stuart (temp. Lt., New Armies Gen. List), and to be Hon. Lt., H. St. C. Duncan (temp. Sec. Lt., Br. W.I.R.), April 23rd; R. L. Paine (temp. Sec. Lt., York R.); E. F. Rogers (temp. Lt., M.G.C.), and to be Hon. Lt., April 24th; J. C. Houston, M.C. (Lt., Lovat's Scouts Yeo., T.F.), and to be Hon. Lt., April 25th; B. W. P. Kirby (Sec. Lt., Dorset R., Spec. Res.), April 27th; F. Egerton (temp. Lt., A. Cyclist Corps), and to be Hon. Lt.; F. G. W. King (temp. Lt., R. Ir. Fus.), and to be Hon. Lt., April 28th; T. Sandilands (temp. Lt., Sco. Rif.), and to be Hon. Lt., April 29th; J. Schofield, M.C. (Capt., Essex R., T.F.), and to be Hon. Capt., H. B. Hampson (Lt. Manch. R., Spec. Res.), and to be Hon. Lt.; H. D. D. C. Tiley (Lt., E. Surr. R., Spec. Res.), and to be Hon. Lt., April 30th; F. H. Williams (late Lt., Cape Cyclists), and to be Hon. Lt.; A. H. Malan (late Lt., S.A. Inf.), and to be Hon. Lt., May 2nd; S. S. Saunders, June 7th.

The follg. Cadets are granted temp. commns. as Sec. Lts. (A. and S.); G. H. Keat, May 19th; L. S. Macdonald, W. G. Landon, May 21st.

The follg. Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (A. and S.):—W. E. Lewis, A. J. Mantle, H. M. Schofield, F. C. Wareham, J. P. Corkery, June 7th.

L. Timmons, Prob. Obsr. Officer (late R.N.A.S.), is granted a temp. commn. as Sec. Lt., Obsr. Officer, April 25th.

The follg. Cadets are granted temp. commns. as Sec Lts., Obsr. Officers:—B. L. M. Bunting, G. R. Porteous, A. Golding, J. P. Mills, T. J. Leighs, G. Paul, E. T. Jupp, W. C. Dargavel, R. D. Hughes, T. W. Hopley, C. A. Moth, June 22nd; A. E. Doncaster, H. Ellis, N. W. Jackson, J. K. Mitchell, P. E. Olley, H. Pitkin, D. C. Roy, L. F. C. Sayers, J. L. Stephenson, W. H. Thornton, June 24th.

Sec. Lt. J. McDonald (late Gen. List, R.F.C., on prob., date of first commn. March 14th) is confirmed in his rank as Sec. Lt., Obsr. Officer, June 7th.

H. W. Goss is granted a temp. commn. as Sec. Lt. (K.B.), May 31st.

The follg. Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (Dir.):—W. A. Rahn, E. V. Hunter, J. T. Phillips, R. C. Unmack, R. H. Baker, R. C. Hawken, N. M. Smith, June 5th.

Capt. R. E. Cuff (Capt., N. Lan. R., Spec. Res.) relinquishes his commn. on account of ill-health, June 26th.

Lts. relinquish their commns. on account of ill-health caused by wounds, and are granted the hon. rank of Lt.:—G. Kay, E. T. Vautier, June 26th.

Lt. C. R. F. Wickenden relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lt., June 26th.

Lt. A. Ashton (Lt., R.G.A., Spec. Res.) relinquishes his commn. on account of ill-health contracted on active service, June 26th.

Sec. Lt. F. E. B. Lord Napier and Ettrick relinquishes his commn. on account of ill-health contracted on active service, June 26th.

The notification in the "Gazette" June 7th concerning A. R. Coppin is cancelled.

The initials of E. B. G. Morton are as now described, and not as in "Gazette" of June 18th.

Administrative Branch.—Capt. F. C. Dixon to be temp. Maj. whilst empld. as Maj., June 15th.

To be temp. Capts. whilst empld. as Capts.:—Sec. Lt. (temp. Lt.) H. B. Everest, April 1st, Sec. Lt. J. I. Thompson, but with pay and allowances of Lt., April 22nd; Lt. J. N. Stephens, May 31st; Lt. F. Hitchins, June 1st, Lt. (Hon. Capt.) E. W. ffrench (from A. and S.), June 17th; Lt. Lord H. Cecil, June 18th.

Sec. Lts. to be temp. Lts. whilst empld as Lts.—H. L. Dawson, May 31st; J. E. Dawes, June 2nd; (Hon. Lt.) G. F. Randall, June 3rd; (Hon. Lt.) F. H. Jones, June 9th.

Lt. T. B. W. Spencer to be Lt. (from A. and S.), June 10th

P. Lormani (Hon. Lt. in Army) is granted a temp. commn. as Lt., June 17th.

The follg. are granted temp. commns. as Sec. Lts.—L. R. Ellwood (Hon. Lt. in Army), and to be Hon. Lt., May 20th; J. E. Betts, T. Caine, A. E. Leggatt, B. S. Tydd, M. J. Watt, June 13th; C. L. Champion, O. T. Burne (late Lt., R.N.V.R.), and to be Hon. Capt., June 17th; G. T. Cain (late Flt. Sub-Lt., R.N.A.S.), and to be Hon. Lt.; V. J. Atterton, D. J. Beaumont, I. G. Bethwaite, E. J. H. Bluett, E. J. Brocks, D. Cameron, A. J. Christie, C. M. S. Churchill, S. J. Collcutt, J. Colquhoun, J. H. Davie, S. S. Dillingham, H. Ellingham, H. J. Gerrod, F. F. P. Hammond, L. H. S. Hardy, W. H. Hitch, G. Hobson, A. L. Hookham, C. H. Ivatts, A. H. M. Jacoby, R. E. Jeffrey, J. Johnston, W. A. A. Joyner, T. G. Knowles, M. Laidlaw, C. C. Lindsay, A. G. S. Lyford, A. R. Matthews, D. McCulloch, C. McPherson, S. C. Millett, B. Moore, W. H. Osborne, G. Overton, H. C. Pearson, W. Ponting, A. Potter, R. L. Powell, C. Rolfe, W. P. G. S. McHutchen, H. S. Shaw, R. W. Simpson, F. C. Starkey, H. W. Weedon, H. R. White, H. Willis, H. Worley, R. Wylie, S. L. Boothroyd, G. R. Neal, J. H. Pattman, J. Rowley, June 20th; J. M. Blake, H. E. Rea, June 21st; L. T. M. Griffin (late Lt., R.F.A.), and to Hon. Lt., C. N. Leeston-Smith (late Flt. Sub-Lt., R.N.A.S.), and to be Hon. Lt., T. Bell, G. W. Biddle, W. N. Doble, W. G. Fairley, J. S. Hodgson, F. V. Mataraly, T. J. O. O'Hara, E. Redpath, June 24th; R. Laurier, June 26th; W. Littlejohn, June 27th.

Lt. H. C. Wright relinquishes his commn. and is granted hon. rank of Lt., June 26th.

Sec. Lt. J. W. Webberley relinquishes his commn. on account of ill-health contracted on active service, and is granted hon. rank of Sec. Lt., June 26th.

Technical Branch.—Maj. R. G. L. Markham to be temp. Lt.-Col. whilst empld. as Lt.-Col., April 1st.

Lts. (temp. Capts.) to be temp. Majs. whilst empld. as Majs.:—E. W. Havers, May 22nd; J. J. Botterill, June 1st.

The follg. are granted temp. commns. as Capts.:—A. F. Allan, E. E. Benest, April 1st.

Sec. Lts. to be temp. Lts. whilst empld. as Lts.:—(Hon. Capt.) H. E. Paquin, May 13th; W. G. Horton, May 23rd; E. C. Robinson, May 27th; R. G. Shackel, June 9th.

The follg. are granted temp. commns. as Sec. Lts.:—F. J. Welch (late Lt., R.N.V.R.), and to be Hon. Capt.; P. S. Reed (late Lt., R.N.V.R.), and to be Hon. Capt., April 1st; A. G. F. Nash, June 20th.

Sec. Lt. J. G. F. F. Horridge relinquishes his commn., and is granted the hon. rank of Sec. Lt., June 26th.

Medical Branch.—H. F. Horne (Bt. Maj., R.A.M.C., T.F.) is granted a temp. commn. as Maj., and to be temp. Lt.-Col. whilst empld. as Advisory Sanitary Officer, May 28th.

Capt. T. Gibbons, from Obsr. Officer, is granted a temp. commn. as Capt., April 27th.

The follg. are granted temp. commns. as Capts.:—G. D. Kerr, May 1st; C. H. S. Taylor (temp. Surgeon, R.N.), June 5th; C. S. Glegg, June 7th; F. L. Dickson, A. Moir-Gray, H. Munro, C. R. M. Pattison, June 10th; W. T. Williamson, June 25th; S. J. Moore, June 26th.

The follg. are granted temp. commns. as Lts.:—H. C. Cox, June 1st; R. Malcolm, June 4th; C. A. E. Cook, J. B. Dunlop, P. Hardy, G. A. Simmons, A. J. Swanton, B. R. B. Truman, P. E. Williams, J. W. Yorke-Davies, June 10th; H. F. Squire, C. H. Vernon, June 18th, W. A. Cooper, June 20th; W. Cahill, June 24th; E. S. Sharpe, June 26th.

Memoranda.—The follg. are granted temp. rank of Capt. while spec. empld.:—Lt. M. R. Grover, Sec. Lt. R. Bonser, May 29th.

Sec. Lt. H. J. Burns is granted temp. rank of Lt. while spec. empld., May 29th.

Lts. relinquish their commns. on ceasing to be empld.:—R. Parkhouse, June 17th; P. Brookes, June 18th.

War Office, June 26th.

Regular Forces.—Establishments.—R.F.C.—Mil. Wing.—Flt. Comdr.—The surname of Temp. Lt. J. S. Dunkerly, Gen. List, is as now described, and not as in "Gazette," May 27th.

Flying Officers.—Capt. R. G. McMullen, W. Ontario R., Canadian Exped. Force, March 13th; Lt. J. A. Mansfield, M.C., R. Ir. Fus., and

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to be secd., March 16th. Temp. Lt. Draper, Gen. List, March 24th. Temp. Sec. Lts. (on prob.), Gen. List, and to be confirmed in their rank :—B. Mignault, Dec. 12th, 1917; J. C. L. Mercer, G. F. Manning, Dec. 19th, 1917; J. C. Enlsen, Jan. 5th; A. M. Sandetson, Jan. 7th; W. E. Huxtable, Jan. 11th; G. F. Thompson, Jan. 21st; R. G. Robertson, Jan. 22nd; A. E. Hill, Feb. 17th; L. A. C. Hudson, Feb. 28th; J. A. van Tilburg, March 3rd; K. de Pass, March 4th; A. H. Chisholm, C. Brown, March 8th; E. P. Larrabee, March 10th; J. R. O'Connell, March 11th; G. C. W. Sutcliffe, March 20th; L. K. Devitt, March 22nd, E. A. Elliott, March 23rd; H. C. Rath, March 24th; L. Yerex, March 26th; H. Macpherson, March 28th; H. L. Yates, March 29th; C. P. Uhrich; E. C. Matthews, March 30th; B. Sleightnolm, March 31st.

The appt. of Temp. Sec. Lt. C. F. Brown, attd Durh L.I. notified in "Gazette," April 11th, is cancelled.

Flying Officer (Obsr.).—Temp. Sec. Lt. C. R. Pilcher, R.E., Jan. 20th, seny. Nov. 29th, 1917, substituted for notification in "Gazette," Feb. 14th.

Asst. Instr. in Gunnery.—Graded as an Equipt. Officer, 2nd Cl.—Temp. Sec. Lt. R. C. Sugars, Lab. Corps, to be transfd. to R.F.C., Gen. List, and to be temp. Lt. while so empld., March 31st.

Equipt. Officer, 2nd Cl. Temp. Lt. O. W. Clapp, Gen. List, from 3rd Cl., Feb. 2nd.

Gen. List.—The following to be temp. Sec. Lts. :—Actg. Cpl. G. C. W. Dufty, from R.E., T.F., March 13th; Motor Cyclist Cpl. J. A. Critchley, from R.E., March 23rd.

General List, R.F.C.—Cdt. N. D. Willis to be temp Sec. Lt, July 5th, 1917, substituted for "Gazette" notification, July 26th, 1917, page 7608, describing name as N. P. Willis.

War Office, June 27th.

The King has been pleased to approve of the award of the Military Medal to the following N.C.O. and Man :—

4248 Flt. Serjt. C. F. Ford, R.F.C. (Chichester).

Aus./319 2nd Cl. Air Mech. W. E. Ries, Aust.F.C.

REGULAR FORCES.—Establishments.—R.F.C.—Mil. Wing.—Flying Officers.—Temp. Sec. Lt. (on prob.) R. Musgrave, Gen. List, and to be confirmed in his rank, Feb. 14th; Temp. Sec Lt. (on prob.) G. E. Satterthwaite, Gen. List, and to be confirmed in his rank, Feb. 18th; the appt. of Sec. Lt. C. H. Harrison, Yorks L.I., T.F., notified in "Gazette" of July 21st, 1917, is antedated to June 9th, 1917.

Balloon Officer.—Lt. A. Richards, Middx. R., T.F., from a Flying Officer, March 15th.

Gen. List.—To be temp. Sec. Lts. :—Pte. R. Fawcett, from A.S.C., March 1st; Pte. G. Burton, from A.S.C., March 3rd; Pte. C. T. Davies, from Yeo., T.F., March 19th.

War Office, June 28th.

R.F.C.—Mil. Wing.—The follg. appt. is made :—Flying Officer.—Temp. Sec Lt. (on prob.) W. B. Fox, Gen. List, and to be confirmed in his rank, Feb. 17th.

Gen. List.—Spr. J. C. Edwards, from R.E., to be temp. Sec. Lt., March 12th

Air Ministry, June 28th.

R.A.F.—The follg. temp. appts. are made :—Staff Officers, 2nd Cl.—And to be temp. Majs. while so empld. :—(P.).—Capt. W. D. Budgen, Lt. (temp. Capt.) H. J. G. Newman, June 29th.

Staff Officers, 3rd Cl. (P.) :—Capt. M. W. Bovill, May 26th; Capt. C. J. Foot, June 10th. (Q.).—Sec. Lt. (temp. Lt.) J. S. Goggin, and to be temp. Capt. while so empld., May 17th; Lt. (temp. Capt.) T. L. Edwards, and to retain his temp. rank while so empld., June 3rd.

Flying Branch.—Lts. to be temp. Capts. while empld. as Capts. (A. and S.) :—L. P. Coombes, A. O. Lewis-Roberts, June 12th; W. F. J. Harvey, June 17th.

To be Lts. (A. and S.) :—Sec. Lt. (Hon. Lt.) T. W. L. Dickson (from Tech.), June 29th; Lt. R. P. Romer (from K.B.), June 28th

Lts., from Obsvr. Officers, to be Lts. (A. and S.) :—K. E. Tanner, April 24th; L. F. Ebbutt, May 15th; C. Donald, May 16th; C. N. Silvester, May 19th; W. Henderson, May 21st; W. E. B. Barclay, M.C., and to be Hon. Capt., May 22nd; C. D. McGurk, S. D. Chard, May 23rd; H. W. Steele, May 25th; M. H. Drake, G. W. Doolittle, May 26th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts (A. and S.) :—J. C. Barker, April 5th; R. A. Arnott, W. F. Thorne, April 12th; E. W. Thomson, April 14th; W. M. Standring, R. E. La Douceur, April 15th; P. C. Heathers, April 17th; L. T. Armstrong, A. C. Forrest, April 18th; M. S. Misener, April 19th; G. R. Young, April 20th; R. G. Sparey, May 6th; H. W. G. Triggs, C. R. Knott, S. Whitehouse, H. Nattrass, May 11th; H. W. Sheard, T. E. McMann, G. M. P. O'Keefe, D. S. Carrie, May 14th; G. C. Rogerson, May 15th; W. H. Thomas, A. Preston, J. D. McKeogh, May 16th; R. R. H. Taylor, L. B. Jupp, J. H. B. Roy, L. A. Whiting, A. S. Compton, A. T. W. Boswell, J. S. Pickles, J. W. Sole, F. Hamilton, May 17th; H. Phillips, H. M. Bickle, P. A. Haynes, F. T. Cockburn, May 18th; D. S. Reid, W. A. Erskine, F. C. Wells, S. W. Hollingworth, G. A. H. Nudds, May 19th; A. Wilkinson, J. T. Sorley, T. Lees, J. C. Stone, H. B. Varley, B. C. Fox, C. E. Turner, D. C. Collier, T. H. Laing, H. Wearne, W. Lofts, G. C. Page, H. D. Haynes, May 20th; E. Slinger, G. K. Green, A. McFarlan, E. K. Wallis, J. R. Hill, J. P. McClelland, I. L. Dutton, C. S. Hill, F. T. Stott, J. E. Machin, C. O. Carson, S. C. Lambert, J. N. Ogilvie, May 21st; C. R. Campbell (date of first commn., Feb. 10th), H. Douthwaite, A. C. Macaulay, F. W. B. Anderson, H. A. Scrivener, C. Workman, R. M. Helm, A. W. Kilpatrick, R. H. Mullens, R. H. Rickards, L. S. Ford, R. Pattison, J. H. W. Haswell, F. A. Browning, R. G. Mullette, J. G. Winks, May 22nd; L. A. Arnold, B. Dixon, H. Walker, J. G. Coots, May 23rd; H. H. Blanchard, C. H. Seffery, G. B. Dunlop, P. E. J. Thomas, May 24th; N. Cooper, L. G. Cartwright, L. S. McCullagh, H. Seddon, J. R. Dean, C. A. Harvey, J. E. Crouch, G. D. Coates, T. G. C. de Vall, W. D. Williams, R. B. Wightman, L. Stuart Ash, W. A. Brett, W. E. C. Cooper, S. J. Mason, A. Paget, B. Dawe, E. Hemsley, D. T. Turnbull, J. F. McNamara, R. W. T. Harrow, S. T. Franks, W. Hall (date of first commn., Feb. 2nd); L. L. Saunders, C. E. Thomas, C. S. Garden, E. J. Madill, G. S. Taylor, E. J. Stevenson, G. P. Giles, W. R. Allison, R. G. Carr, T. H. Jacques, D. C. McDonald, May 25th; G. L. Bell, C. R. Roushorne, C. W. Russell, F. B. Love, R. B. Murray, F. E. Asboe, A. L. Bloom, F. W. P. Reynolds, W. H. Basker, W. Marsden, W. E. G. Heanly, N. O. M. Foggo, J. K. Grant, May 26th; A. R. S. Procter, G. C. Easton, J. E. Gibbons, C. S. Gray, R. Bennett, H. E. Gentles, C. Keene, J. T. Rose, H. F. Shrimpton, C. V. Towns, A. Bennett, G. C. R. Hamilton, G. F. Geiger, G. A. R. Hill, G. Wright, B. H. Fitter, J. A. Robertson, C. F. Abbott, L. H. Ridley, C. F. W. Illingworth, A. C. Irwin, E. L. McCowen, J. Sayner, A. W. Grant, E. H. Cornes, J. H. Walton, F. W. Syer, May 27th, J. G. Andrews, J. G. Hojel, A. C. Scott, G. A. Treadgold, H. M. Jacques, R. H. McSheppard, C. Hinns, A. T. Wiltshire, May 28th; A. A. Bartram, G. A. A. Parsons, D. H. Tyler, R. L. Lawson, R. McK. Soulby, S. H. Batty, P. King, C. A. Pierpoint, A. Hemingway, May 29th; J. W. F. Merer, F. J. Hunt, P. W. Lingwood, May 30th; W. H. Salmon, May 31st

J. Hewitt (Capt., late Gen. List, R.F.C.) to be Sec. Lt. A. and S., and to be Hon. Capt., May 26th.

P. T. Carden, M.C. (Lt., late Gen. List, R.F.C.), to be Sec. Lt., A. and S., and to be Hon. Lt., May 26th.

F. de M. Hyde (Sec. Lt., late Spec. Res., R.F.C., on prob.) is confirmed in his rank as Sec. Lt., A. and S., May 25th.

G. C. Hyde (Sec. Lt., late Spec Res., R.F.C., on prob.) is confirmed in his rank as Sec. Lt., A. and S., May 26th.

The follg. are granted temp. commns as Sec. Lts. (A. and S.) :—J. C. Belford (Lt., L'pool R., T.F.), and to be Hon. Lt., May 9th; R. D. Blackman (temp. Capt., A.S.C.), and to be Hon. Capt., May 11th; P. J. Rahill (Lt., Ches. R.), and to be Hon. Lt., May 13th; E. Cropper (Lt., Alberta R., C.E.F.), and to be Hon. Lt., May 16th; J. M. Brown (Sec. Lt., Sco. Rif., Spec. Res.), D. Millar (Lt., High. L.I., T.F.), and to Hon. Lt., May 18th; H. S. Hobby, M.C. (Lt., Yorks. R., Spec Res.), and to be Hon. Lt., May 19th; J. C. Robinson (temp. Sec Lt., Yorks. L.I.), R. J. Weatherill (Lt., Cent. Ont. R., C.E.F.), and to be Hon. Lt., May 20th; G. Jacob (Sec. Lt., E. York. R.), H. M. Smith (Sec. Lt., Suff. R., T.F.), P. W. Fox (Lt., Br. Columbia R., C.E.F.), and to be Hon. Lt., May 21st; F. H. Choate (Lt., Alberta R., C.E.F.), and to be Hon. Lt., C. S. Whellock (temp. Sec. Lt., attd. R. Suss. R.), F. G. Prince (Sec. Lt., Lond. R., T.F.), May 22nd; G. H. E. Roxburgh (Sec. Lt., High. L.I., T.F.), L. G. Bullock (temp. Sec. Lt., attd. Notts and Derby R.), May 23rd; M. C. Fraser (temp. Sec. Lt., attd. Arg. and Suth'd Highrs.), May 24th; W. G. Davis (temp. Sec. Lt., attd. R. Fus.), W. Dougall, M.C. (Lt. Sask. R., C.E.F.), and to be Hon. Lt., B. A. Wilson (Lt., C.F.A., C.E.F.), and to be Hon. Lt., J. T. Smeeton (Lt., Br. Columbia R., C.E.F.), and to be Hon. Lt., May 25th; A. W. Davidson (temp. Sec. Lt., Wilts R.), A. T. Reed (Sec. Lt., Lond. R., T.F.), J. M. Robertson (Sec. Lt., High. L.I., T.F.), May 26th; L. T. Smith (Sec. Lt., Yorks. L.I.), S. L. Mucklow (Sec. Lt., Lancs. Fus., T.F.), R. R. C. Winter (temp. Sec. Lt., Durh. L.I.), T. St. P. Bunbury (Capt., R.F.A.), and to be Hon. Capt., S. E. Arridge (Sec. Lt., Yorks. L.I., Spec. Res.), M. C. Cook (temp. Sec. Lt., Notts and Derby R.), P. Dendy (Sec. Lt., Norf. R., T.F.), A. W. Allan (Lt., Camb. R., T.F.), and to be Hon. Lt., R. E. Davidson (Lt., Can. F.A., C.E.F.), and to be Hon. Lt., May 27th; J. S. H. Willis (temp. Sec. Lt., E. Kent R.), May 28th; M. E. Challis (Sec. Lt., W. Kent R., T.F.), J. Stell (Sec. Lt., R. Scots, Spec. Res.), May 29th; H. J. Gemmel (temp. Sec. Lt., Rif. Brig.), S. H. Joelson, M.C. (temp. Lt., attd. R. Fus.), and to be Hon. Lt., May 30th.

Cadet F. O. McDonald is granted a temp. commn. as Sec. Lt., A. and S., May 17th.

Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lt., A. and S. :—J. B. Badgley, H. J. McLeod, C. B. Rutherford, May 24th; W. D. E. Donaldson, May 25th; H. G. Clapison, R. W. Frost, May 26th; S. B. Potter, H. C. Price, A. G. Fraser, June 12th.

F. Rooney is granted a temp. commn. as Sec. Lt. (K.B.), June 2nd.

Cadets are granted temp. commns. as Sec. Lts., Obsr. Officers :—H. Wepener, C. I. Bray, C. J. Byrne, S. Burn, S. C. Barrow, T. W. Brodie, S. G. Birch, E. J. Corbett, C. M. Coleman, R. Cockburn, F. G. Craig, D. O. Davies, H. Draper, J. H. Dunbar, S. R. Durdin, J. Gondré, W. E. Harper, A. B. Henderson, N. Johnson, J. W. London, J. N. Mitchell, H. S. Mantle, F. F. McKilligin, F. G. Mills, L. Millar, J. Pullar, D. B. Robertson, G. W. Shickle, A. A. Simpson, June 15th; S. G. Bates, June 24th.

Lt. J. E. Rettie resigns his commn. and is granted the hon. rank of Lt., June 29th.

Lt. R. J. Grose relinquishes his commn. and is granted the hon. rank of Lt., June 29th.

Administrative Branch.—J. H. M. Arden, D.S.O. (Bt. Lt.-Col., Res of Officers, temp. Lt.-Col. in Army) is granted a temp commn as Lt.-Col., June 17th.

C. V. Beresford (Maj., Worc. R.) is granted a temp commn. as Maj., June 5th.

Sec. Lt. (temp. Maj.) J. E. L. Wrench, C. M.G., to be Lt., April 2nd.

W. M. Long (temp. Lt., R.F.A.) is granted a temp. commn. as Lt., and to be temp. Capt. whilst empld. as Capt., April 1st

W. H. Bragg (Lt., R.F.A., T.F.) is granted a temp. commn as Lt., June 6th.

Sec. Lts. to be temp. Lts. whilst empld. as Lts. :—(Hon. Lt.) J. A. Gibson, May 13th; (Hon. Lt.) R. F. Messervy, June 5th; A. L. Cockburn, (Hon. Lt.) T. A. Gardiner, June 13th.

To be Lts. :—Lt. B. R. Apps (from A. and S.), April 20th; Lt. V. G. Southern, M.C. (from A. and S.); Lt. L. Walmsley, M.C. (from Obsr.), June 14th.

Sec. Lt. F. H. Barratt relinquishes his commn., and is granted the hon. rank of Sec. Lt., June 29th.

Sec. Lt. E. M. de Fleury resigns his commn.

Technical Branch.—Lt. (temp. Capt.) J. Inwood to be temp. Maj. while empld. as Maj., April 1st (substituted for notification in "Gazette," April 19th).

Lts. A. and S., to be Lts. :—F. W. Clarke, June 1st; A. H. Rayner, June 13th.

Lts., A. and S., to be Sec. Lts. (Hon. Lts.) :—J. A. Rossi, May 25th; F. E. Richardson, J. Robertson, G. H. Wilkinson, June 8th.

Lts., Obsr. Officers, to be Sec. Lts. (Hon. Lts.) :—E. L. Pollard, M.C., J. C. Boughton, May 25th; C. E. Day, H. R. Ward, F. A. Herron, H. I. Fordred, June 8th.

Sec. Lts. (late Gen. List., R.F.C., on prob.) are confirmed in their rank as Sec. Lts. :—J. V. Cook, June 7th; H. H. Ballard, R. O. Montgomerie, June 8th.

The follg. are granted temp. commns. as Sec. Lts. :—J. Imber, April 1st; E. G. A. Jones (Lt., York and Lanc. R., T.F.), and to be Hon. Lt., May 25th; W. G. N. Cutt (temp. Lt., M.G.C.) and to be Hon Lt.; A. T. Brogden (Lt., Durh. L.I., T.F.), and to be Hon. Lt.; A. H. Cray (Sec. Lt., Northd. Fus., T.F.); W. Rose (temp. Lt., M.G.C.), and to be Hon. Lt., June 8th; S. W. Turner, Sec. Lt., from Admin., to be Sec. Lt. May 31st.

Medical Branch.—Lt. (temp. Capt.) C. H. Biddulph-Pinchard to be temp. Maj. while empld. as Admin. Maj, April 20th (substituted for notification in "Gazette," May 31st).

The follg. are granted temp. commns. as Capts. :—A. L. George, June 7th; F. N. B. Smartt, June 21st.

The follg. are granted temp. commns. as Lts. :— H. G. James, H. L. Smallbone, S. G. Smith, July 1st.

Lt. G. O. Roper, from Flying Branch (K.B.), to be Lt., June 22nd.

Memoranda.—Sec. Lts to be Lts. :—F. Cain, L. J. Gavin, S. M. Pemberton, April 2nd; A. S. Hamilton, E. J. Mott, May 10th.

War Office, June 29th.

REGULAR FORCES.—Establishments.—R.F.C.—Mil. Wing.—Flight Comdr.—Temp. Sec. Lt. J. H. Mitchell, Gen. List, from Flying Officer, and to be temp. Capt. while so empld., March 13th.

Flying Officers.—Temp. Sec. Lts. (on prob.), Gen. List, and to be confirmed in their rank :—A. E. Mewett, Feb. 25th; E. C. Shurley, March 2nd; C. Wilderspin, March 3rd; T. A. Akin, March 4th; W. E. Jackson, March 5th; E. W. Helmer, March 9th; F. P. Little, G. W. Hawken, March 10th; D. A. Shanks, B. M. F. Albanese, March 12th; C. F. Kelsch, March 16th; V. B. McIntosh, March 18th; R. Viall, March 19th; E. G. Weller, March 20th; W. R. K. Atkinson, March 21st; T. B. Burns, March 23rd; H. W. How, March 25th; L. Wilson, March 26th; C. A. Sperry, W. J. Sampson, March 30th; J. B. Seaward, C. E. Hill, T. C. McKechnie, March 31st.

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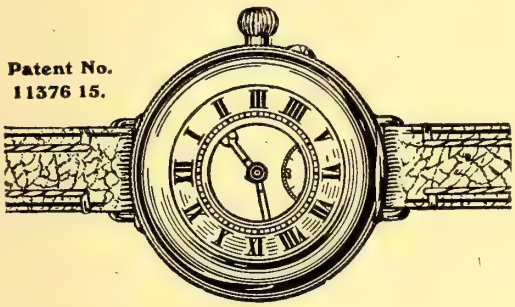
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S. M. Campbell, Sco. Rif., T.F., from an Asst. Instr. in Gunnery (graded as an Equipt. Officer, 3rd Cl.), Feb. 19th.

Equipt. Officers, 2nd Cl.—Lt. A. H. C. Bruce, R.A., from the 3rd Cl., Feb. 8th.

3rd Cl.—Temp. Lt. S. R. Chapman, Bedf. R., and to be transfd. to R.F.C., Gen. List, March 1st.

Gen. List.—Temp. Sec. Lt. S. E. Lewis (Capt., S. Afr. Def. Forces) relinquishes his temp. commn. on ceasing to be empld., Dec. 11th, 1916; Sub-Lt. H. A. Pound, from R.N.V.R., to be temp. Lt., Feb. 6th.

War Office, July 1st.

Regular Forces.—Establishments.—R.F.C.—Mil. Wing.—Balloon Officers, Lt. G. P. Robinson, Middx. R., T.F., and to be secd.; Temp. Capt. B. B. C. E. Jameson, Gen. List; Lt. F. D. Levy, Lond. R., T.F., and to be secd.; Lt. G. H. H. Box, S Staff. R., Spec. Res., and to be secd. Temp. Sec. Lts. (on prob.), Gen. List, and to be confirmed in their rank:—S. C. Lockwood, T. H. Noble, March 15th.

Equipt. Officer, 2nd Cl.—Lt. W. Birtwistle, Spec. Res., from the 3rd Cl., Feb. 20th.

FROM THE COURT CIRCULAR.

Buckingham Palace, June 26th.

The King held an Investiture in the Quadrangle of the Palace this morning.

The following Officers were severally introduced into the presence of His Majesty, when the King conferred the under-mentioned decorations:—

The Military Cross.—Major Gerald Dixon-Spain, R.A.F.; Capt. Douglas Cooke, R.A.F.; Lt. Henry Crowe, R.A.F.; Lt. Geoffrey Leslie, Aust. Infantry, attached Aust. F.C.; Lt. Leslie Wharton, Aust. F.C.

Buckingham Palace, June 29th.

The following were severally introduced into the presence of His Majesty, when the King conferred decorations as follows:—

The Distinguished Service Cross.—Maj. the Viscount Maidstone, R.A.F.; Capt. Percy Rawlings, R.A.F.

The Military Cross.—Lt. Anthony Leach, British W. Indies R., attd. R.A.F.

Buckingham Palace, July 1st.

Maj.-Gen. F. H. Sykes (Chief of the Air Staff, R.A.F.), and Lt. J. B. Robinson, R.A.F., had the honour of being received by The King this morning.

NAVAL.

Admiralty Communiqués

June 26th.—During the period June 20th-23rd operations by Air Force contingents working with the Navy have been very considerably hindered by unfavourable weather.

In addition to reconnaissance and offensive patrols, however, day bombing raids have been carried out on Bruges and Ostend docks, and about four tons of bombs dropped on quays and sheds. The enemy aerodrome of Mariakerke was also bombed.

In home waters, during this period—in spite of the unsuitable weather—anti-submarine and escort duties have been maintained by aeroplanes, seaplanes and airships. Enemy mines have been located and sunk, and submarines attacked.

It has now been ascertained that the pilot of the large seaplane which was forced to alight near the coast of Holland on June 6th shot down another enemy seaplane, making a total of three destroyed on this occasion—not two as was previously reported

Information has now been received that the crew of two of a British seaplane, which was shot down by an Albatros scout about 12 miles off Durazzo on May 27th last, were rescued by an accompanying British seaplane, which alighted by the disabled machine and took off the crew. In spite of the fact that a rear strut had been shot away, the petrol tank shot through, and floats pierced in many places by machine-gun bullets, the pilot successfully returned to the base

June 29th.—Weather conditions during the period June 24th to 26th inclusive have not been generally favourable for operations. Air Force contingents working with the Navy have, however, carried out continuous offensive operations, some 15 tons of bombs being dropped on enemy targets and fires started.

Enemy aircraft have been active, and three enemy machines were driven down. Two of our machines are missing.

In home waters during the same period anti-submarine, escort, and hostile aircraft patrols have been maintained by seaplanes, aeroplanes, and airships. Hostile submarines have been sighted and attacked. Enemy mines have been located and destroyed, and Allied and neutral ships have been escorted.

MILITARY.

G.H.Q. Communiqués.

June 25th, 7.44 p.m.—In spite of high wind on June 24th our aeroplanes did a great deal of reconnaissance and other work during the earlier part of the day, and a large number of hostile batteries and other targets were successfully engaged by our guns with the assistance of aerial observation. Later in the day heavy rain made flying impossible.

Bombing behind the enemy's lines was carried on with vigour whenever the weather permitted, 15 tons of bombs being dropped by our machines.

The enemy did not give our aviators many opportunities for combat, but two German machines were destroyed.

Three of our aeroplanes are missing.

In addition to the enemy machine already announced as destroyed on June 23rd, a second machine is now established to have been brought down on that date.

June 26th, 8.12 p.m.—Weather conditions on June 25th were unfavourable for artillery observation, but some hostile batteries were located and reported by our machines. A number of reconnaissances were carried out, also, and photographs taken.

In air fighting, 10 enemy aeroplanes were destroyed and four driven down out of control. Seven of our own machines are missing.

The total weight of bombs dropped during the day and the night following amounted to 10 tons.

June 27th, 8.8 p.m.—Seven German machines were brought down by our aviators on June 26th, and two others were driven down out of control.

Two of our aeroplanes are missing.

With the improvement of the weather, more photographic and artillery observation work was accomplished than has been possible for some time.

Day bombing machines dropped 14¼ tons of explosives on enemy railway stations, dumps, transport, and billets, and on Bruges Docks.

On the night of June 26th-27th bombing operations continued, and 16 tons of bombs were dropped by our night-flying machines on various targets without loss.

June 28th, 7.35 p.m.—On the 27th inst. a full day's work was done by our reconnaissance, artillery, and photographic machines, and by our observation balloons.

There was some increase of hostile activity in the air, and more fighting took place. Twenty German aeroplanes were destroyed, and nine others driven down out of control.

Fourteen of our machines are missing.

Bombing was carried out vigorously behind the German lines, and 21 tons of bombs were dropped by us during the 24 hours on railway junctions and other targets.

June 29th, 8.33 p.m.—There was much fighting in the air on the British front on the 28th inst., and enemy machines showed considerable activity. During the day we shot down 17 German aeroplanes, and drove down six others out of control

Three of our machines are missing.

Our aviators and balloons employed in observation work took advantage of the fine weather to co-operate with the artillery in engaging hostile batteries and dumps with good destructive effect. A great number of explosions and fires were caused thereby.

Photographic machines were also active, and many reconnaissances were carried out both by day and night.

Twenty-two tons of bombs were dropped by us during the day on various targets, and 14½ tons in the course of the following night.

June 30th, 8.26 p.m.—Hostile activity in the air on the 29th inst. was not very great, but our fighting machines succeeded in destroying nine German aeroplanes and in driving down eight others out of control.

Five of our machines are missing.

Much important reconnaissance work was carried out by us, and a number of aerial photographs were taken. Aeroplane and balloon observation was afforded to our artillery throughout the day as usual.

Fifteen and a-half tons of bombs were dropped by our machines during the day, the most important targets being the railways at Lille, Courtrai, Comines, and Estaires.

At night there was bombing on both sides. The enemy did practically no damage, and lost a machine We dropped 18 tons of bombs, of which eight tons were launched upon the railway connections at Tournai.

All our night-flying machines returned safely.

July 1st, 8.25 p.m.—On June 30th we had a most successful day in the air.

In fighting, 25 enemy machines were shot down and 10 others were driven down out of control. Two German balloons were destroyed in addition.

Our aviators carried out a large number of reconnaissances over the lines both by day and by night, and many aerial photographs were taken.

The number of hostile batteries destructively engaged by our artillery with aeroplane and balloon observation was greater than on any day during the past fortnight.

Twenty-nine and a half tons of bombs were dropped by us by day and 17 tons on the following night. Of the latter, over seven tons fell with good effect on the railway connections at Tournai.

From the whole of these operations all our aeroplanes returned safely, with the exception of one scout and one night-bombing machine.

War Office Communiqué.

July 1st.—The G.O.C. Italy reports: The weather has, on the whole, been unfavourable for flying. Since my last report, six enemy aeroplanes have been destroyed and one driven down out of control. One of our machines has failed to return.

AIR FORCE.

Air Ministry Communiqués.

June 25th.—On the evening of the 23rd inst. the weather cleared somewhat, and our bombing squadrons carried out a series of attacks on Metz-Sablon station, three during the evening, and a fourth after nightfall. Clouds prevented observation of the results obtained, but over six tons of bombs were dropped on this objective.

On the 24th inst., in spite of high winds and clouds, attacks were successfully carried out upon the factories and sidings of Saarbrücken, the factories at Dillingen (12 miles north-west of Saarbrücken), and the railway sidings at Metz-Sablon.

Our formations were attacked by enemy aeroplanes, one of which was sent down in flames, whilst another was driven down out of control.

All our machines returned safely.

June 25th, 5.20 p.m.—On the morning of the 25th inst. attacks were successfully carried out against the railway sidings and factories at Saarbrücken, the engine sheds and barracks at Offenburg (13 miles south-east of Strassburg), and the explosives factory works and railway station at Karlsruhe.

Many direct hits were observed on the engine sheds at Offenburg, and also on the barracks.

At Karlsruhe two direct hits were observed on the engine sheds and on the Metallurgique works, causing a large explosion. This is confirmed by photographs. The factories and station at Saarbrücken were damaged.

In the course of many attacks by hostile aeroplanes on our machines two of the enemy were shot down and two others were driven down.

Three of our machines are missing, one of which is known to have been forced to land in the enemy's lines with engine trouble.

June 26th, 11.35 p.m. (Independent Force).—On the night of the 25th-26th inst. successful attacks were made by us on the enemy's aerodrome at Belcham. Observation was difficult, but much damage is believed to have been done, and a fire was started. Bombs were released from low altitudes and machine-guns were fired into the hangars, trains were attacked by machine-gun fire by low-flying machines, and one was brought to a standstill.

A large number of bombs was also dropped on the railway sidings at Metz-Sablon.

On the 26th inst. the railway establishments and powder works at Karlsruhe were attacked with good results. The powder works, the main station, and other railway buildings were hit.

Our formations were heavily attacked by hostile aeroplanes. Three of our machines have not returned.

June 27th, 9.45 p.m.—On the night of the 26th-27th inst. our aeroplanes attacked the chemical works at Ludwigshafen, the factories and railway sidings at Saarbrücken, and the aerodrome at Belchen.

Several bombs fell on an active furnace at Saarbrücken. At Belchen aerodrome two hangars were set on fire, also one machine which was out on the aerodrome.

All our machines returned safely. One of our machines which was yesterday reported missing has since returned.

The enemy bombed one of our aerodromes during the night. No damage was done to our aeroplanes

June 29th, 3.10 a.m.—On the afternoon of the 28th inst. our aeroplanes attacked the railway workshops, stations, and sidings at Thionville.

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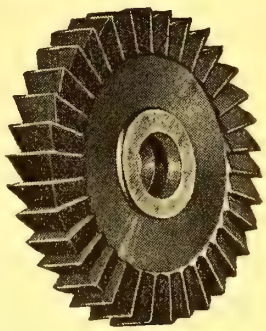
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Observation was difficult, but direct hits were observed on the works and railway line. Nearly three tons of bombs were dropped on this objective. Our formations were attacked by hostile aeroplanes. Severe fighting ensued, during which three hostile aeroplanes were shot down and one other was driven down. Two of our machines have not yet returned, one of which is known to have been forced to land through engine trouble.

On the night of the 27th-28th our aeroplanes made a successful attack on the enemy's aerodrome at Bolchen. Bombs were released from a low altitude, and machine-guns were fired into the hangars. All our machines returned safely.

The enemy bombed one of our aerodromes last night. No material damage was done.

10.30 p.m.—On the evening of the 28th inst. the enemy aerodrome at Frescaty (about three miles south-west of Metz) was attacked. Owing to bad visibility the bursts were unobserved.

On the 29th inst. the Badische Anilin und Soda Fabrik at Mannheim, in spite of adverse weather conditions, was very successfully attacked. Many heavy bombs were dropped, and six bursts were observed on the factory. Our formation was attacked over the objective by five hostile machines. Three of these were driven down, two of which were out of control. All our machines returned safely.

June 30th, 10.5 p.m.—On the night of June 29th-30th bombing squadrons attacked the railway works at Thionville, the sidings at Metz-Sablon, the enemy's aerodrome at Frescaty and Boulay (Bolchen), and other military obectives. Mists prevented the observation of results.

On the 30th inst. we dropped many bombs at Hagenau (about 16 miles north of Strassburg) aerodrome with good results.

The barracks and station at Landau (north-west of Karlsruhe) were also bombed.

The formation over Landau was heavily attacked by hostile aeroplanes. Three of the enemy were destroyed. Two of our machines are missing.

July 2nd.—In addition to the attacks already reported on the night of June 29th-30th, the chemical works at Mannheim were also bombed.

One of the machines reported as missing on the 30th ult. has now returned.

On the night of June 30th-July 1st further attacks were made on the enemy acrodrome at Boulay (Bolchen), on railway works and stations at Thionville, Remilly, Landau, Zweibrücken, and Saarbrücken.

The works at Mannheim were again attacked.

On July 1st the railways and workshops at Karthaus, the station at Trèves, and the railway triangle at Metz-Sablon were bombed with good effect.

One hostile machine was shot down.

Two of our machines are missing.

THE CASUALTY LIST.

NAVAL.

Reported June 26th.

Previously reported Missing, now reported Killed.—Kilner, Flt. Comdr. B. D., R.N.
Purdy, Flt. Lt. C. C., R.N.

MILITARY.

Reported June 26th.

Prisoner in German Hands.—Richardson, Lt. D. D., E. Surr. R., attd. R.F.C.

Reported June 27th.

Previously reported Missing, now reported Killed.—Borthistle, Lt. W. J., R. Muns. Fus., attd. R.F.C.

Australian Force.—Killed.—McFarlane, Lt. P., Aust. Inf.
Primrose, Lt. L. J., Aust. F.C.
Retchford, Lt. A. R., Aust. Inf
Missing.—Rackett, Lt. A. R., Aust. Inf.

Reported June 28th.

Australian Force.—Wounded.—Hamilton, Lt. H. E., Aust. F.C.

Previously reported Missing, now reported Prisoners in Turkish Hands.—Haig, Lt. F. W., Aust. F.C.
Rutherford, Capt. D. W., Aust. F.C.

Reported July 2nd.

Previously reported Missing, now reported Killed.—Moore, Lt. C. G., R.F.C.

Casualties Among N.C.Os. and Men.

The Dates are those of the Official List.

Reported June 18th.

Previously Missing, now reported by the German Government Killed or Died of Wounds.—R.F.C.—Comerford, 1166 Serjt. C. (Gillingham)

Reported June 20th.

Previously reported Missing, now reported Prisoner of War.—R.F.C.—Guyat, 36287 2nd Cl. Air Mech. J. G. (Kensington, W.).

Previously reported Missing, now reported Prisoner of War in German Hands.—R.F.C.—Sutcliffe, 407086 Cpl. F. R. (Melksham).

* * *

The following soldiers, who were prisoners in Germany, have arrived in Holland for internment:—

R.F.C.—Coleman, 10805 E.; Robinson, 10387 T. N.; Shaw, 4995 P. J.; Taylor, 3813 H.

AIR FORCE.

Reported June 27th.

Killed.—Collier, Lt. S., M.C., Manch. R. (T.F.), attd. R.A.F.
Cox, Sec. Lt. J. W., R.A.F.
D'Arcy, Sec. Lt. S. H. A., D.S.O., R.A.F.
Johns, Lt. R. L., R.A.F.
Mason, Lt. N., R.A.F.
Monk, Capt. E. W., Lond. R. (T.F.) and R.A.F.
Smith, Sec. Lt. T. E., Worc. R. and R.A.F.

Previously reported Missing, now reported Killed.—Arnot, Sec. Lt. A. O. McD., R.A.F.

Wounded.—Aldridge, Lt. E. D., R.A.F.; Daltrey, Sec. Lt. F., R.A.F.; Lowe, Capt. T. C., R.A.F.; Menhennitt, Sec. Lt. E. H., R.A.F.; Mason, Sec. Lt. S. D., Som. L.I., attd. R.A.F.; Murdock, Lt. R., K.O.S.B., attd. R.A.F.; Rowlands, Sec. Lt. H., R.A.F.; Sykes, Sec. Lt. A. A., R.F.A. (S.R.), attd. R.A.F.; Williams, Sec. Lt. W. H., R.A.F.; Withers, Sec. Lt. A. S., R.A.F.

Previously reported Missing, now reported Wounded and Prisoner.—Clark, Capt. G. C., R.A. and R.A.F.

Previously reported Missing, now reported believed Wounded and Prisoners.—Atkinson, Sec. Lt. F., R.A.F.; Jones, Sec. Lt. A. V., R.A.F.; Tylor, Sec. Lt. C. E., R.A.F.; Wood, Sec. Lt. J. C., R.A.F.

Previously reported Missing, now reported believed Prisoners.—Birch, Lt. S., R.A.F.; Bollins, Sec. Lt. A. P., King's (Lpool. R.), attd. R.A.F.; Hillyard, Sec. Lt. V. W. H., R.A.F.; Scott-Kerr, Lt. W. F., Loth. and Bdr. Highrs. and R.A.F.

Previously reported Missing, now reported Prisoner.—Leavitt, Sec. Lt. H. J., R.A.F.

Reported June 28th.

Killed.—Bowick, Lt. W. R., R.A.F.
Brewer, Sec. Lt. T. E., R.A.F.
Jones, Lt. M. G., M.C., Northd. Fus. and R.A.F.
Scott, Lt. G. M., R.A.F.

Died of Wounds.—Pither, Capt. S. E., K.O.S.B., attd. R.A.F.

Drowned.—Nickells, Sec. Lt. C. C. G., R.A.F.

Wounded.—Bayly, Sec. Lt. C. J., R.A.F.; Foster, P./F./O. H. E., R.A.F.; Raby, Sec. Lt. T. D., R.A.F.; Rivett-Carnac, Lt. W. J., R.A.F.; Storrey, Capt. A., A.S.C. and R.A.F.; Storrey, Lt. J. E., R.A.F.; Thursfield, Sec. Lt. J. T., R. War. R., attd. R.A.F.

Missing.—Belgrave, Capt. J. D., M.C., Ox. and Bucks. L.I. and R.A.F.; Brown, Sec. Lt. J. L., R.A.F.; Legge, Sec. Lt. W., R.A.F.; Lewis, Sec. Lt. R. G., R.A.F.; McKenzie, Sec. Lt. A., R.A.F.; Nicholas, Sec. Lt. E. M., R.A.F.; Thompson, Sec. Lt. G. F., R.A.F.; Weaver, Capt. J., R.A.F.

Reported June 29th.

Killed.—Hamilton, Capt. H. J., D. of Corn. L.I., attd. R.A.F.
Pullen, Sec. Lt. W. S., R.A.F.
Russell, Lt. J. G., R.A.F.
Satterthwaite, Sec. Lt. J., R.A.F.
Whiteside, Lt. M. B. D., H.L.I., attd. R.A.F.

Died of Wounds.—Welford, Sec. Lt. L. C., R.A.F.

Wounded.—Anderson, Capt. S., H.L.I., attd. R.A.F.; Beare, Sec. Lt. P. R., R.A.F.; Boyce, Sec. Lt. E. F., R.A.F.; Hall, Sec. Lt. R. S. C., R.A.F.; Lyell, Lt. W. H., Gord. Highrs., attd. R.A.F.; McConville, Lt. M., W. Yorks R., attd. R.A.F.; Nutt, Capt. D. L., R.A.F.; Ogilvie, Col. A., R.A.F.; Thornton, Sec. Lt. C. D., R.A.F.; White, Sec. Lt. C. H., R.A.F.

Missing.—Bertrand, Sec. Lt. P., R.A.F.; Fellowes, Lt.-Col. P. F. M., R.A.F.; Levick, Sec. Lt. C., R.A.F.; Melbourn, Sec. Lt. A. R., R.A.F.; Tarbutt, Sec. Lt. F. C., R.A.F.; Thompson, Sec. Lt. H. G., R.A.F.

Reported July 1st.

Killed.—Boles, Lt. J. L., R.A.F.
Champneys, Sec. Lt. J. A. L., R.A.F.
Durrant, Sec. Lt. L. A., R.A.F.
Ellison, Lt. S. W., R.A.F.
Rhodes, Sec. Lt. T. G., R.A.F.
Satterthwaite, Sec. Lt. G. E., R.A.F.
Warwick, Sec. Lt. J. L., R.A.F.

Wounded.—Cameron, Sec. Lt. G. A., R.A.F.; Coghlan, Sec. Lt. E. A., R.A.F.; Gamon, Capt. J., R.A.F.; Holland, Sec. Lt. J. H., R. Fus., attd. R.A.F.; Jennings, Sec. Lt. J. H., R.A.F.; Leach, Sec. Lt. W. F., R.A.F.; Muir, Sec. Lt. J. S., R.A.F.; Strickland, Sec. Lt. C. H., R.A.F.; Wilson, Sec. Lt. C. E. C., R.A.F.

Missing.—Gannaway, Sec. Lt. C. H., R.A.F.; Glasspoole, Sec. Lt. G. H., R.A.F.; Goller, Sec. Lt. J. M., R.A.F.; Hirst, Sec. Lt. S., R.A.F.; Hughes, Lt. J. M., S. Lancs. R. (T.F.), attd. R.A.F.; Mercer-Smith, Sec. Lt. V., R.A.F.; Ross-Jenkins, Sec. Lt. M., Glouc. R., attd. R.A.F.; Spurgin, Sec. Lt. F. R. G., R.A.F.; Vick, Sec. Lt. H., R.A.F.; Wild, Sec. Lt. H., R.A.F.

Reported July 2nd.

Killed.—Barlow, Sec. Lt. L. C. J., R.A.F.
Campbell, Sec. Lt. K. T., R.A.F.
Douglas, Sec. Lt. J., R.A.F.
Fuhr, Sec. Lt. H. R., R.A.F.
Harrow, Sec. Lt. R. W. T., R.A.F.
McGillivray, Sec. Lt. A. G., R.A.F.
O'Connell, Lt. C. W., Lond. R. and R.A.F.
Strugnell, Sec. Lt. L. W., Middx. R., and R.A.F.
Wilkinson, Sec. Lt. L., R.A.F.

Wounded.—Dean, Capt. H. P., R.A.F.; Gogarty, Lt. A. J., R.A.F.; Hughes, Sec. Lt. H. A., R.A.F.; Oakes, Sec. Lt. J., R.A.F.; Proctor, Lt. G. D., Innis. Dragoons and R.A.F.; Rutter, Lt. L. H. C., R.A.F.; Walmsley, Sec. Lt. L. E., R.A.F.; Watt, Lt. W. L., R.A.F.

Missing.—Burdick, Capt. F. W., Lond. R. (T.F.) and R.A.F.; Collett, Lt. H. S., Suff. R., attd. R.A.F.; Evans, Lt. H. B., R.A.F.; Fyfe, Sec. Lt. R. J., R.A.F.; Leigh, Lt. R. L., R.A.F.; Mulroy, Lt. H. J., R.A.F.; Neilson, Lt. P., R.A.F.; Nicholson, Lt. O. H., R.A.F.; Shillingford, Lt. S. C., R. Fus., attd. R.A.F.

Casualties Among N.C.Os. and Men.

The Dates are those of the Official List.

Reported July 1st.

Wounded.—Allen, 113322 3rd A/M G. A. (Manchester); Foster, 140802 2nd A/M W. H. (Manitoba, Canada); Graham, 123659 3rd A/M T. M. (Stoke Newington); Lightfoot, 109043 2nd A/M E. (Birmingham); Williamson, 97713 2nd A/M R. (Pytchley).

Missing.—Anthony, 7856 1st A/M G. R. (London, S.W.); Nichols, 93455 2nd A/M W. N. J. (Fulham); Parker, 11901 1st A/M R. H. (Twickenham); Raymond, 402077 2nd A/M W. (Manchester); Turner, 67978 2nd A/M J. A. (Grimsby).

PERSONAL NOTICES.

NAVAL.

Deaths.

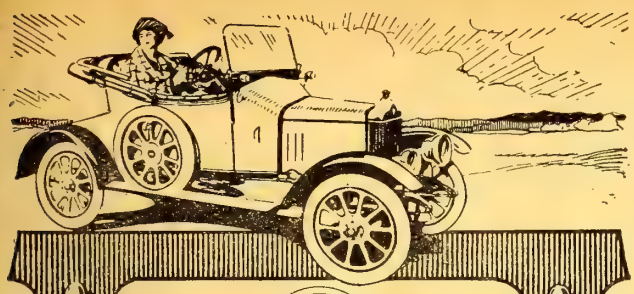
DALLAS.—Major Roderick S. Dallas, Royal Air Force, D.S.O., D.S.C. (killed in action), was appointed squadron commander in the Naval Wing of the Royal Flying Corps in June, 1917.

As flight sub-lieutenant he was awarded the D.S.C. in September, 1916, when it was stated in the "London Gazette" that "in addition to performing consistently good work in reconnaissances and fighting patrols since December, 1915, has been brought to notice by the Vice-Admiral, Dover Patrol, for the specially gallant manner in which he has carried out his duties.

"Amongst other exploits is the following: On May 21st, 1916, he sighted at least 12 hostile machines which had been bombing Dunkirk. He attacked one at 7,000ft., and then attacked a second machine close to him. After reloading he climbed 10,000ft., and attacked a large hostile two-seater machine off Westende. The machine took fire and nose-dived seawards. Another enemy machine then appeared, which he engaged and chased to the shore, but had to abandon owing to having used all his ammunition."

More honours had since been gained by Major Dallas, amongst them the Companionship of the D.S.O.

Roderick Dallas had become almost a legendary hero in the R.N.A.S. He was a pilot of quite extraordinary skill, a fighting man of astonishing gallantry, a humorist of a high order, and a black and white artist of unusual ability. But, above and beyond all this, he was a great leader of men. To be in Dallas's



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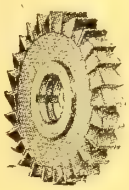
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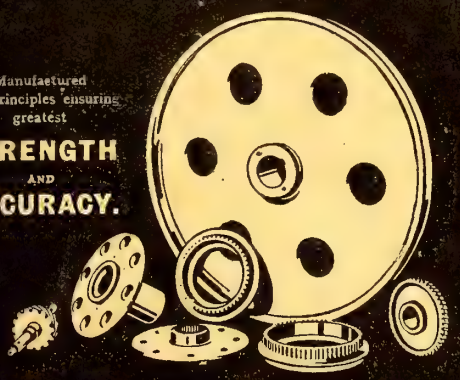
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squadron was quite one of the highest honours open to a young fighting pilot of the R.N.A.S., and the high reputation held by certain of the R.N.A.S. squadrons operating with the R.F.C. during the past year or two has been largely due to the training, example, and leadership of Roderick Dallas.

Among the stories told of his exploits is one that, having "lost his engine" at some 15,000 feet, he was proceeding to glide home, when two unwary Huns attacked him, thinking that this English machine with its engine stopped was easy meat. To their surprise, brief but poignant, Dallas shot them both, and reached home safely.

It is also told of him that when operating in Belgium he used to make a habit of chasing Germans back to their own aerodromes and shooting them down therein, as, he said, the moral effect was greater than if they were brought down in the open country, unseen by their comrades. Whether these stories are literally true or not, they, and many like them, indicate the reputation which Dallas had won in his Service.

When his death first became known it was stated that he was killed by a shell on an aerodrome, but since then it has been said that he was brought down by an enemy aviator when flying a machine to which he was not very well accustomed and which was not so quick in handling as his own machine. Whatever the cause of his death Roderick Dallas died gallantly in the King's Service, and leaves behind him a name which will live long in the memory of the Royal Air Force.—C. G. G.

KILNER.—Flt.-Comdr. Bertram Denison Kilner, R.N., who has been missing since Sept. 25th, 1917, is officially presumed killed on that date. At 5.30 in the morning of that day he flew by himself from the deck of his ship in pursuit of a Zeppelin. He was 22 years old, and the second and younger son of Mr. and Mrs. W. A. Kilner, late of Skisdon House, Richmond, and now of 84, Montpelier Road, Brighton. His elder brother is Wing-Comdr. C. F. Kilner, D.S.O., R.M. He was educated at Eastbourne and Brighton colleges.

He served at Dunkirk, and was one of the night-flying pilots, and he afterwards served in Gallipoli, from which place he was invalided home.

The Flag Officer of the squadron of which his ship was a unit wrote of him: "He is a great loss to the —— Force, and besides being a splendid flier, he was very popular with all who knew him. He was always overflowing with keenness to do anything, and his one aim was to get a Zeppelin single-handed."

KITCHIN.—Lt. John Frederick Raymond Kitchin, R.A.F., accidentally killed on June 21st, when starting out upon a patrol, was a son of the late Clifford Kitchin and of Mrs. Clifford Kitchin, of Holmwood, Boar's Hill, Oxford. He was educated at Clifton College (preparatory school) and at Braidlea, Stoke Bishop, and afterwards privately, with the intention of going up to Oxford. As soon as he was 18 he was given a commission in the R.N.A.S. For the last nine months he had been employed on active service at stations in England. His commanding officer found him a most capable pilot and writes that he had carried out much useful work.

BIRTH.

LESLIE.—On the 28th ult., at 12, Park Street, Park Lane, the wife of Maj. Reginald Leslie, D.S.C., R.A.F., of a daughter.

MILITARY.

DEATHS.

HENDERSON.—A friend in France writes of Capt. Ian Henderson, who was killed while flying on June 21st, the following appreciation which appeared in the "Times" of July 2nd:—

"Ian Henderson had not yet gone to Sandhurst when the war began. When he reached France he was still a child. When he was killed he was, for the Air Service, comparatively old. He was one of the first pilots to carry out successful low flying during the Battle of the Somme, where his work was as valuable as it was daring, as accurate as it was inspired. I remember him flying back with his sketch maps straight from the battle day after day as happy as a bird after his strenuous and thrilling work. He met with two very bad flying accidents later. He was an accomplished and masterly pilot. He had flown almost every machine that exists, and taken part in almost every kind of air activity. As to his personality, the usual phrases seem strangely lifeless and inadequate when applied to him. One only felt in his society that whatever happened there was nothing seriously rotten in the state of England as long as she could produce such boys—boys with the brains of men, the courage of lions, and the light golden heartedness of children—

"'All plumed like estridges that wing the wind'
And witching the world with noble airmanship."

JENKIN.—Capt. Louis Fleeming Jenkin, M.C. and bar, R.A.F., who was reported missing on September 11th, 1917, is now officially presumed killed. He was the second son of the late Austin Fleeming Jenkin, barrister-at-law, of the Inner Temple, and was educated at Dulwich College, where he gained a mathematical scholarship and his colours for cricket and football, and was in the O.T.C. He had entered for Trinity College, Cambridge, but on the outbreak of war he joined the Public Schools Corps, and within a week obtained his commission in the Loyal North Lancashire Regiment. He was badly wounded at Vimy, and on his recovery joined the Royal Air Force, and went again to France at the beginning of April last year.

PATERSON.—Lt. John Herbert Paterson, Indian Cavalry, attd. R.A.F., who was accidentally killed while flying in Egypt on June 21st, was the eldest son of Mr. John Paterson and Mrs. Paterson, of Shalimar, Beckenham, Kent. He was 25 years old.

PEARSON.—Capt. William Reginald Guy Pearson lost his life at a northern aerodrome, owing to a collision in the air on June 20th, 1918, in which Lts. McFarlane and Flynn were also killed. He was 21 years of age, and was educated at Ashdown Park and Berkhampsted, where his classical attainments promised a brilliant university career. At the outbreak of war he enlisted in the Empire Battalion, Royal Fusiliers, and later receiving a commission in the A.S.C. proceeded to France in January, 1915, but very shortly afterwards joined the R.F.C. in France, and acted for several months as an artillery observer.

Returning to England he completed his training as a scout pilot, and served in France in a fighting squadron for nearly a year, during which time he had over 50 encounters with enemy machines, and was officially credited with having brought down 11 German aeroplanes, many of them two-seaters. He became a Flight Commander and gained his captaincy, and was mentioned in dispatches.

Capt. Pearson was a flying instructor at the time of his death, and he was considered one of the most careful and skilful of pilots. His noble and unassuming character endeared him to all with whom he was brought into contact. Capt. Pearson was the second son of Dr. and Mrs. Spencer Pearson, of Clapham Road, S.W.9.

PITHER.—Capt. Sidney E. Pither, K.O S.B. and R.A.F., who died of accidental wounds in the Government Hospital, Suez, on June 11th, 1918, was the second son of the late Fras. L. Pither, of Tollington Park, N.

REDLER.—Lt. H. B. Redler, M.C., R.A.F., met his death while flying in Scotland in company with Capt. I. H. D. Henderson, M.C., R.A.F. Mr. Redler, who was only 21 years old, was the eldest son of Mr. and Mrs. D. B. Redler, of Moorreesburg, South Africa, and formerly of West Honkton. He left South Africa at the end of 1915 to join the R.F.C. in England. He had been to France twice, and won the Military Cross there.

STORRS.—Lt. Henry Lionel Storrs, R.A.F., who died from wounds received on June 15th, was the second son of Mr. H. T. S. Storrs, Headmaster of Shirley House Preparatory School, Old Charlton. He was born in 1896, and was educated at his father's school and at Westminster, where he was a King's Scholar. He obtained his colours for rowing, and was a corporal in the school O.T.C. In 1916 he was elected to a Westminster scholarship at Trinity College, Cambridge, but did not go into residence, as he obtained a commission in the Royal Flying Corps in August of that year. He went out to France as an observer in January, 1917, returning in July to train for his pilot's course, and proceeding to France again in December. He was wounded in a fight with ten enemy aeroplanes on June 15th, and, though seriously injured, he succeeded in bringing his machine safely back to his aerodrome.

WILSON.—Lt. Geoffrey Wilson, R.A.F., reported missing on May 15th, now reported killed in action, was the younger son of Dr. H. Wilson, J.P., and Mrs. Wilson, of Cheadle, Cheshire. Educated at Aldenham, he returned from Saskatchewan, where he was farming, in October, 1914, enlisted in the A.S.C. (H.T.), and obtained his commission in the following December. After 18 months' active service he transferred to the R.F.C. in France, where he served as an observer for six months, and afterwards became a pilot.

MARRIAGES.

ADKINS—MAY.—The marriage arranged between Lt. W. R. Adkins, Royal Fusiliers and R.A.F., and Miss M. A. Vrena May took place quietly at St. George's Church, Hanover Square, on Tuesday, July 2nd, at 1.

ALFORD—CHAMBERLAYNE.—On June 29th, at St. James's Church, Piccadilly, Capt. Francis R. Alford, M.C., R.A.F., was married to Rosalie Francesca, daughter of Mr. and Mrs. Tankerville Chamberlayne, of Cranbury Park, Hants.

ALPORT—WINTLE.—On June 26th, at St. Mary's, Warbleton, Sussex, by the Rector, Rev. Charles Henning, Capt. Claude Mashiter Alport, the Black Watch, attd. R.A.F., younger son of the late Mr. Lawrence Alport and of Mrs. Alport, 148A, Sloane Street, S.W., was married to Violet, only child of Mr. and Mrs. Leslie Charles Wintle, "Lantao," Eastbourne.

DEAN—McNEILL.—On June 17th, at St. Ninian's, Hampstead, Major H. Gordon Dean, York and Lancaster Regt., attd. R.A.F., was married to Helen McNeill, daughter of the Rev. John McNeill, of Hampstead, and Denver, U.S.A.

KAY—FRANK.—On June 23rd, at the West London Synagogue, by the Rev. Morris Joseph, assisted by the Rev. Isidore Harris, Gilbert Kay, Lt., R.F.C., to Theodora, youngest daughter of the late Julius Frank and of Mrs. Frank, of 2, Glenshaw Mansions, Priory Road, London, N.W.

Alldays

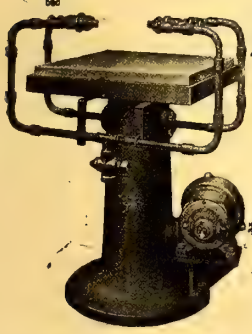


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KELWAY—MILES.—On June 25th, at the Parish Church, Great Yarmouth, Lt. Cedric Vincent Kelway, R.G.A., attd. R.A.F., was married to Barbara, daughter of John C. Miles, J.P., The Denes, Great Yarmouth.

MURRAY—LEIGH.—A marriage took place recently between Maj. F. J. S. Murray, Canadian Infantry, attd. R.A.F., and Ethel M. Leigh, widow of Bernard H. Leigh, Royal Berkshire Regt., only child of Col. and Mrs. Pelly, Houghton Manor, Huntingdon.

* * *

Mr. William Taylor, 23 House, Kowloor Docks, Hong Kong, would be grateful to hear from any soldier who last saw his son, Sec. Lt. Thos. Taylor, R.F.C., R.E.F. Reported missing on March 26th, and later reported killed in action.

* * *

Will those writing to Prisoners of War in Germany kindly inquire for Capt. H. W. E. Barwell, M.C., and Capt. R. P. Fenn, both R.F.C., missing together March 25th?—Information will be gratefully received by William Barwell, 26, George Road, Edgbaston, Birmingham

AIR FORCE.

Deaths.

APPLEBY.—Sec. Lt. Edwin Alec, R.A.F., who was killed in Lincolnshire on June 24th, was the third son of Mr. and Mrs. Appleby, of 264, Brixton Hill. He was 18½ years old.

CARTER.—Sec. Lt. Alan Carter, R.A.F., who was accidentally killed while flying abroad on June 25th, was the only son of Herbert and Florence Carter, Feering, Essex. He was 24 years of age.

CATTLE.—Lt. F. L. Cattle, R.A.F., who was accidentally killed while flying abroad on June 29th, was the second son of Mr. and Mrs. Arthur E. Cattle, 69, Ridge Road, Stroud Green, N. He was in his 19th year.

CHAMPNEYS.—Lt. J. Amyan L. Champneys, R.A.F., who was killed in action on June 17th, was the second son of Mr. and Mrs. Champneys, Otterpool, Sellindge, Hythe, Kent. He was 19 years old.

KROHN.—Sec. Lt. Edmund O. Krohn, R.A.F., who was reported missing on February 28th, and is now officially killed in aerial combat, was the second son of Mr. and Mrs. E. W. Krohn, of Funchal, Madeira, and grandson of the late W. J. Krohn, of London, formerly of Madiera and Petrograd.

Engagements.

GOLDSWORTHY—DONOVAN.—A marriage has been arranged, and will take place next week at Ballymore, between Lt. E. C. Goldsworthy, R.A.F., and Constance S. Bright Donovan, V.A.D., eldest daughter of the late Richard Donovan, D.L., and of Mrs. Donovan, of Ballymore, Camolin, co. Wexford.

NOWELL—HEWITT.—The marriage of Capt. Norman Nowell R.A.F., of Norton-on-Tees, and Joyce, daughter of Mr. and Mrs. Frederick Hewitt, of Hythe, near Southampton, will take place at St. Martin-in-the-Fields, Trafalgar Square, on July 18th, at 12.45.

WHITFELD.—CLARK.—A marriage has been arranged, and will shortly take place, between Nigel Bernard Whitfeld, R.A.F., younger son of Mr. and Mrs. T. Stanley Whitfeld, of Forest Row, and Gladys, only child of Mrs. Podmore Clark, of 65, Queenborough Terrace, Hyde Park.

Marriages.

BENSON—HOPTON.—On June 27th, by the Rev. R. J. Pyddocke, at St. Agnes Church, Moseley, Birmingham, Sec. Lt. P. H. Benson, R.A.F., eldest son of Mr. and Mrs. Benson, of Streatham, was married to Bessie, daughter of the late Mr. and Mrs. Hopton, of Wolverhampton and Birmingham.

PAGE—FAWCETT.—On July 1st, at St. Saviour's Church, Warwick Avenue, Maida Vale, Sec. Lt. Gordon Cecil Page, R.A.F., was married to Mrs. Myra A. Fawcett.

WATSON—CRICHTON.—On June 27th, at the Parish Church, Henley-on-Thames, Capt. Victor A. Watson, R.A.F., to Ethel Mary, elder daughter of Mr. and Mrs. Lionel A. Crichton, Drayton, Henley.

WATSON—DALTON.—The marriage took place on June 29th, at St. Martin-in-the-Fields, of Maj. John Ballingall Forbes Watson, R.A.F., younger son of the late John Watson and Mrs. Watson, of Burnbank, Milnathort, Scotland, and Alexander Mary Georgie, only daughter of Canon and Mrs. Dalton, of the Cloisters, Windsor Castle. The ceremony was performed by the bride's father, assisted by the Rev. H. R. L. Sheppard, vicar of the parish.

Births.

ADAMSON.—On June 30th, at Lanrick, Boscombe, to Nora (*née* Green), the wife of Lt. John Adamson, R.A.F., formerly of Fort Saskatchewan, Alberta, Canada, a daughter.

ALLISON.—On June 27th, at Kensington Road, Middlesbrough, the wife of Lt. George F. Allison, R.A.F., of a daughter.

KEANE.—On June 22nd, at 39, Chalmers Street, Edinburgh, to Evelyn Mary (née Montgomerie), wife of Lt. E. Keane, R.A.F.—a daughter.

KEDDIE.—On June 26th, at Maes-y-bryner, Chadwick Road, Westcliff-on-Sea, the wife of F. Wallace Keddie, Lt., R.A.F., a son.

LANGDALE-SELBY.—On June 22nd, at Grosvenor Cottage, Twickenham, to Capt. and Mrs. M. Langdale-Selby, R.A.F.—a daughter.

PULLEN.—On June 24th, at a nursing home at Reading, the wife of Lt. Walter Pullen, R.A.F., of a son (prematurely).

RAWCLIFFE.—On June 26th, at Canterbury, to Dorice, wife of Lt. Donovan Maclean Rawcliffe, R.A.F.—a son.

STAGG.—On May 9th, at Portland House, Edgbaston, Birmingham, the wife of Capt. H. V. Stagg, R.A.F.—a daughter.

* * *

Sec. Lt. R. J. Gregory, R.A.F., son of Mr. and Mrs. G. H. Gregory, Berwyn, York Avenue, Hove, and The Hawthorns, Burgess Hill, originally reported missing on June 5th, writes to his parents that he is a prisoner of war in Germany, and is well.

FOREIGN COMMUNIQUES.

FRANCE.

June 25th.—During yesterday six enemy aeroplanes were brought down or fell in a damaged condition.

Over four tons of bombs were dropped on aviation grounds in the region of the Aisne

June 26th.—During yesterday 22 enemy aeroplanes were brought down or were obliged to land in a damaged condition. Three kite balloons were set on fire.

Our night and day bombing machines dropped over 17 tons of bombs on aerodromes, bivouacs, cantonments, and ammunition dumps in the battle zone. Explosions and fires were observed.

June 27th.—"Last night several groups of enemy aeroplanes were reported to be proceeding in the direction of Paris. The alarm was given at 11.16 p.m., and defence measures were brought into action. The anti-aircraft batteries put up a violent barrage fire.

"Some bombs were dropped, causing some material damage. The 'All clear' was sounded at 12.35 a.m."

June 27th.—Army of the Orient.—British aviators brought down an enemy machine near Cestovo.

June 28th.—On June 26th and 27th, 19 German aeroplanes were brought down or put out of action, and four captive balloons were set on fire by our chasing machines. In addition, a 20th enemy aeroplane was brought down by the anti-aircraft defences.

Our bombing machines in the same period dropped during the day and night 58 tons of bombs on aerodromes on the Somme and in the region of the Aisne, on cantonments and bivouacs at Rozières en Santerre, Fismes, and Guignicourt, and the railway stations of Soissons and Fère en Tardenois.

Two ammunition dumps blew up and several fires were observed.

Sub. Lt. Sardier brought down on June 4th two captive balloons, the 10th and 11th aircraft brought down up to the present by this pilot.

Groups of enemy aeroplanes in several waves crossed our lines last night and proceeded towards the Paris district. They were met with a particularly violent barrage fire. Our batteries and means of defence were immediately brought into action. Several bombs were dropped, and some casualties and material damage are reported. The alarm was given at 10.39 p.m., and the "All clear" was sounded at 12.5 a.m.

June 29th.—Some enemy aeroplanes proceeded yesterday evening towards the Paris district, and were violently bombarded by our artillery posts. They dropped some bombs, but no casualties have been reported. The alarm was given at 11.39 p.m., and the "All clear" at 12.30 a.m.

June 30th.—On June 28th and 29th our chasing aeroplanes brought down 15 German machines, and set fire to two captive balloons. In addition, 19 other enemy machines were put out of action.

Our bombarders during the same period carried out day and night raids, during which 47 tons of bombs were successfully dropped on the aviation grounds on the Somme, the bivouacs in the Rozières-Braye region, in the valley of the Avre, and the railway stations of Soissons, Fère-en-Tardenois, etc.

On June 28th five tons of explosives were dropped on the German troops, who were preparing to counter-attack in the Cutry region.

Lt. Fonck brought down three German aeroplanes on June 25th, and two others on June 27th. This brings to 49 the number of machines destroyed up to date by this pilot, and officially recorded.

July 1st.—During the day of June 30th, 21 German aeroplanes were shot down or driven out of control. In addition, six captive balloons were set on fire by our crews.

The following night our bombing planes dropped 22 tons of projectiles on the aviation grounds of Picardy, the railway station of Roye, and the dumps of Villiers-Carbonnel, where a violent explosion was observed.

GERMANY.

June 25th.—Lt. Billik has attained his 20th aerial victory.

June 26th.—Five aeroplanes were shot down out of an enemy squadron, which on June 24th flew from (? south) of Soissons to the Aisne to drop bombs.

Twelve enemy machines and three captive balloons were brought down yesterday. Lt. Udet attained his 33rd, 34th, and 35th aerial victories; Lt. Kirschstein his 27th; Lt Rumey his 24th; Lt. Veltjens his 24th; and Lt. Billik his 21st.

June 27th.—Five aeroplanes were shot down out of the enemy bombing echelons which, during the last two days, made raids on Karlsruhe, Offenburg, and the industrial region of Lorraine.

Lt. Rumey obtained his 25th aerial victory

June 28th.—The strong flying forces brought into action led to violent aerial combats.

Yesterday our aviators shot down 25 aeroplanes and one captive balloon, and our anti-aircraft guns shot down five enemy aeroplanes.

Capt. Berthold obtained his 37th aerial victory, Lt. Loewenhardt his 29th, and Lt. Rumey his 26th and 27th.

June 29th.—The enemy suffered a heavy defeat in the air. Nineteen enemy aeroplanes were shot down.

Lt. Udet obtained his 35th aerial victory and Lt. Loewenhardt his 30th.

June 30th.—Lt. Udet gained his 36th and Lt. Loewenhardt his 31st aerial victory. Lt. Jakobs has shot down during the last few days his 20th, 21st, and 22nd opponents.

July 1st.—Lt. Loewenhardt achieved his 32nd aerial victory.

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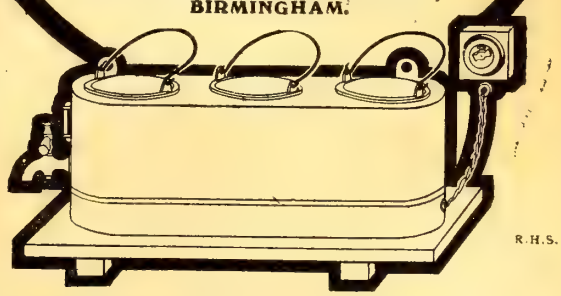
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R.H.S.

AUSTRIA.

July 1st.—Our land and naval aviators carried out successful flights over the region of the mouths of the Piave against enemy military establishments, and returned without losses.

ITALY.

June 25th.—During the day yesterday and last night the aeroplanes carried out effective bombardments. On the 23rd and 24th inst. nine enemy machines were brought down.

June 26th.—Our flights dropped several tons of bombs on enemy ammunition dumps in the Venetian Plain and on the railway establishments of Mattarello (five miles south of Trent). Seven hostile aeroplanes were brought down. Lt. Flavio Baracchini reached his 31st victory.

June 27th.—The Chief of the Naval General Staff has issued the following communiqué:—

The roadstead and military works at Durazzo were bombarded during the day yesterday with visible results by a squadron of British aeroplanes and a squadron of seaplanes belonging to the (Italian) Royal Navy. The enemy machines which rose to fight were compelled to withdraw and did not succeed in preventing the action of the Allied squadrons, all of whose machines returned undamaged to their bases.

June 28th.—The Naval Headquarters Staff has published the following bulletin:—

"On the night of June 26th our hydroplanes proceeded to Durazzo and bombed with good results the quays and hangars. On the morning of the 27th more of our machines repeated the bombardment at the same enemy base, hitting hangars with visibly successful results. In spite of intense anti-aircraft fire our machines returned undamaged to their base, after having driven down off the coast the enemy aeroplane K.237, which was returning from an attack on our torpedo-boats."

June 29th.—Our flying men and those of our Allies dropped bombs on enemy military objectives on the left bank of the Piave, and British aviators brought down three enemy machines

June 30th.—In the Lagarina and Sugana Valleys enemy railway establishments were bombarded by our aviators.

U.S.A.

June 26th.—Last night our aviators were again successful in bombing the railway station and yards at Conflans.

June 28th.—It is established that our aviators have shot down three hostile machines in the Toul region since the beginning of the week-end.

July 1st.—Yesterday one of our aviators shot down a hostile machine in the Toul region.

BELGIUM.

June 25th.—Sous.-Lt. Coppens brought down his eighth enemy balloon. He also brought down a German chasing aeroplane which attacked him.

July 1st.—On June 30th Sous-Lt. Coppens brought down in flames three enemy observation balloons.

THE WAR IN REVIEW.

Presidential Interest.

On June 24th President Poincaré visited the aviation schools at Villacoublay, near Versailles, and inspected the latest types of aeroplanes, as well as several German machines recently captured.

A Descent in Switzerland.

A French biplane armed with two machine-guns, and piloted by a lieutenant, landed in the Canton of Soleure, Switzerland, on June 25th. The machine was damaged by the landing, but the pilot was uninjured.

Aerial Surgery.

According to a dispatch from Dallas, Texas, a hospital aeroplane is the latest innovation in the American Aviation Service. It is an emergency aircraft manned by a skilled pilot, with a physician in the observer's seat, and it is kept ready during all hours of flying practice to enable medical help to reach a fallen aviator.

New Hun Markings.

Details regarding the new marking on German aeroplanes are published by the "Nieuwe Rotterdamsche Courant," June 28th, from a German source. The arms of the black cross are now straight, and not curved as formerly, with white edges. The change is said to have been made because the previous form made recognition of German machines very difficult, and because it easily led to confusion with the circular signs on hostile aeroplanes.

Affairs in Italy.

It is announced that the first detachment of the American Italian-trained pilots, accompanied by Capt. La Guardia, has left Rome for active service on this section of the Allied front. An enthusiastic meeting was called by Capt. Merriam, at which the Hon. E. Chiesa and various important members of the Government and the representative of the War Office were present. The pilots are flying Italian machines.

A useful journey to Friedrichshafen from Venice to photograph the aircraft factories there, and entailing a daylight trip of nearly five hours, and 800 kilometres, is very highly esteemed. The two pilots on small single-seaters were Italians, and the trip has given most excellent results. It took place on May 21st.

The oversea flight along the East coast of the Adriatic down to Albania and home along the West coast carried out by Capt. —— on June 1st, starting from Venice in broad daylight, is probably a record for this country. The distance covered works out at 950 kilometres, and the flight took 5 hours and 45 minutes. Zara, Lake Nadir, Sebenico, Spalato, and Gargano outline the course taken.—T. S. Harvey.

Raids on Germany.

A Berlin telegram, dated June 27th, dealing with the Allied aerial attacks of June 25th and 26th, says that enemy aeroplanes were brought down near Karlsruhe and Saarbrücken, two of them in flames. It further asserts that the damage done by bombs was very slight. Only in Saarbrücken, it says, were there four people killed and 12 injured.

A German Aerial Mail.

A report from Amsterdam states that a German-Ukrainian Air Service was inaugurated on June 22nd, linking Brest-Litovsk with the principal Ukraine towns, Kieff, Odessa, and Ekaterinoslav. The service is soon to be extended from Odessa to Nikolaieff and Kherson, and later to Bucharest, Sebastopol, Feodosia, Rostoff and Taganrog.

The distance from Brest-Litovsk to Kieff (325 miles) is covered in four hours. The aeroplane takes three to four passengers and 300 lb. weight of mails.

Interned in Holland.

The "Telegraaf" states that a British biplane was forced to land near Breskens (close to Flushing) on June 29th owing to engine trouble. The occupants of the machine, Lt. Locker and Gunner Burcois, are both unhurt, and will be interned. They had flown from an aerodrome in France, and had dropped bombs near Bruges.

A Finished Gotha.

A Gotha returning from the raid on Paris on June 27th was brought down by anti-aircraft guns in the Forest de Laigue, north of Compiegne. One member of the crew was killed and two were made prisoners.

The American Air Service in France.

The "Times" correspondent with the American Army in France writes on July 1st:—

The excellent work of the American flying services continues to excite the admiration and encourage the hopes of every one here. Their flying force grows daily. As pilots and observers, the Americans have already demonstrated that in audacity, individual initiative, and courage they are surpassed by none. British night bombers, who are never lavish with praise, speak enthusiastically of the work of the American aviators.

Many American pilots have served with our forces, and have in several cases won distinction among British aviators. A number are still attached to British squadrons.

Since the middle of April the American chasers have brought down 27 German aeroplanes at the cost of less than half that number. Of the 27 Lt. Douglas Campbell and Eddie Rickenbacker, the racing cyclist, have definitely brought down five each.

Paris Twice Raided.

Parisians were twice warned to take cover on the night of June 30th. The first alarm lasted from 11.58 to 12.20, and the second from 12.48 a.m. to 2.20.

In the second attempt the raiders dropped a few bombs in outlying districts. No casualties are reported.

The Austrians on the Piave.

The following is from a description of fighting on the Piave which appeared in the "Neue Freie Presse" of Vienna.

Suddenly aviators also appear. They come down silently from a great height in far-reaching volplanes. Now their motors hum again and their machine-guns rattle. A hail of steel pelts down on the pontoons, which sink riddled. The guns of the defence bark from the bank and fragments of their shrapnel endanger the lives of their own men, men whom they wish to protect. One, two, three of the great Caproni bombarding planes descend, shot down on the mud of the Montello. A Nieuport comes down like a torch hurled from Heaven—the famous aviator, Major Barracca, is a heap of ashes. His list of victories is the same as that of his most victorious Austrian adversary, Captain Brumowsky, who conquered 34 opponents. Lieutenant von Hoffmann, in peace time a Ministerial official in Vienna, and his band dash against the biplanes. Like raging bulldogs the English now advance on their furiously swift Sopwiths against our aviators, engineers, artillery, and infantry. Nothing, absolutely nothing, avails. The enemy aviators are too numerous, the enemy shells too many. Like Sisyphus multiplied a hundredfold the bridge-builders work incessantly; they fall and disappear in the flood without a cry; they launch new pontoons; they think our new methods of transport from bank to bank—nothing helps; absolutely nothing avails. Six times are the bridges and footways completed, six times are they destroyed.

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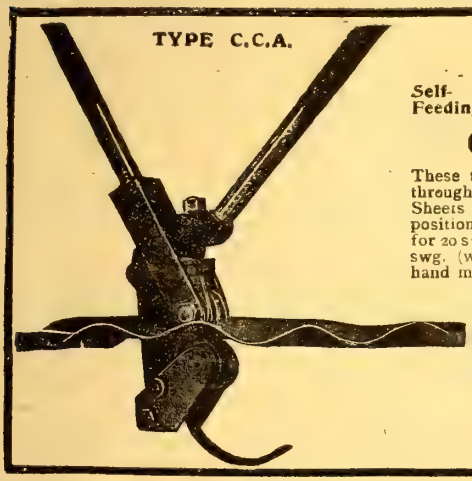
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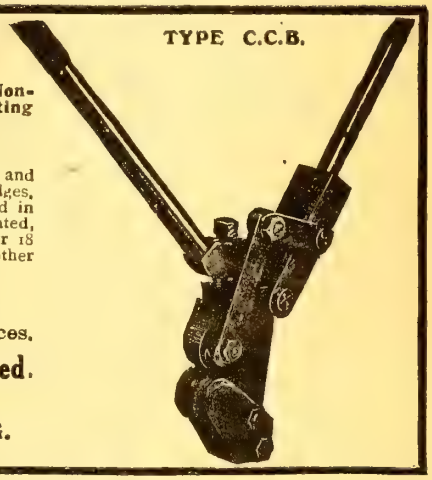
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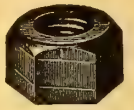
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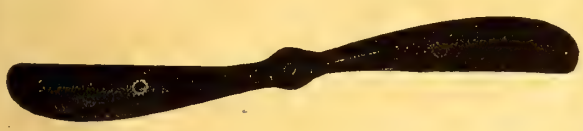
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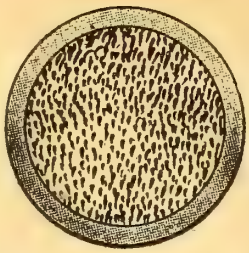
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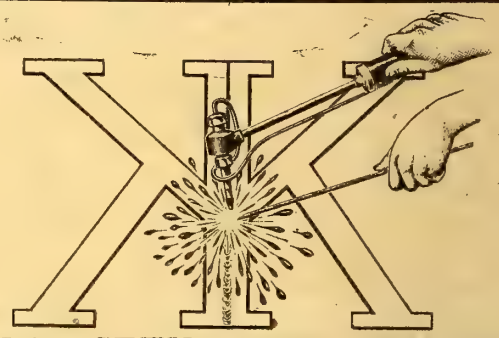
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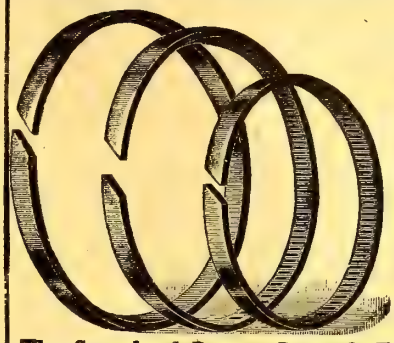
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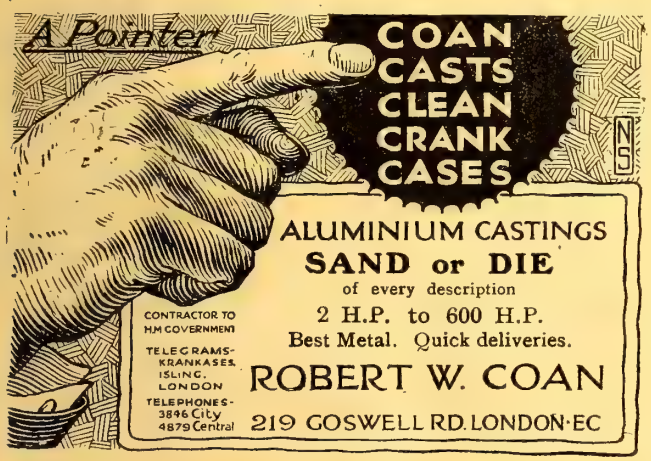
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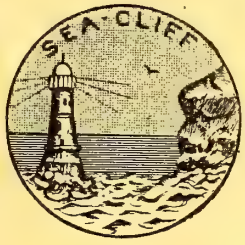
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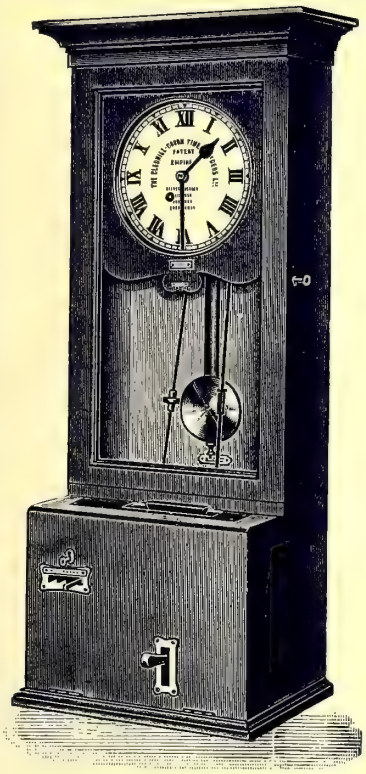
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SYSTEM B.

CHECK No. 315. WEEKLY TIME CARD. Week ending 18 Aug 1916. Name Thos Johnson

Job No.	IN—ON	OUT—			
	5 59 SA 8 29 SA	12 01 S			5½
	5 59 M 8 29 M 1 29 M				
1360		5 02 M			9½
	5 59 TU 8 29 TU 1 29 T				
32		5 01 T			9½
Hrs	5 59 W 8 29 W 1 29 W				
		3 00 W	32½	7½	
	3 00 W				
1510	6 00 TH 8 30 TH 1 29 T	5 01 T		2	9½
11½ Hrs		5 00 T	11½	9½	9½
K.31	6 00 F	7 00 F		1	
E.53	7 00 F 8 29 F	10 00 F		2½	
1820	10 00 F 1 30 F	4 00 F		5	
1469	4 00 F	5 00 F		1	9½
		TOTAL FOR WEEK			53

Job No.	Brought Forward	This Week	Jobs Finished	Carried Forward
1360	16	32	48	
1469				1

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THE AEROPLANE

Edited by C. G. Grey

WEDNESDAY JULY 10 1918.

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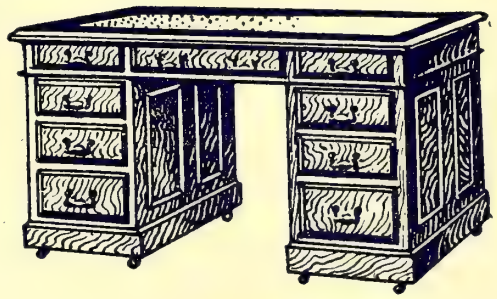
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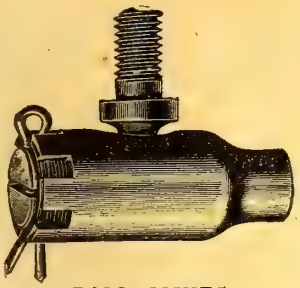
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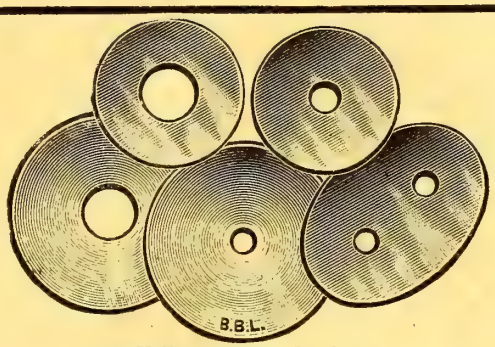
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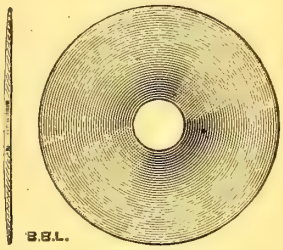
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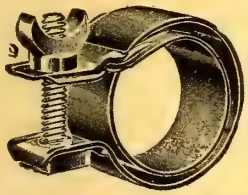
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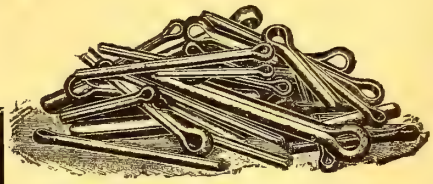
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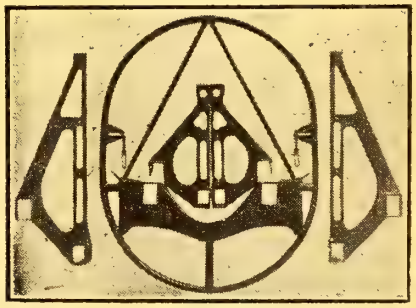
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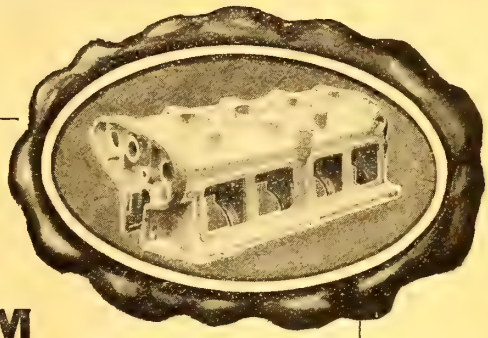
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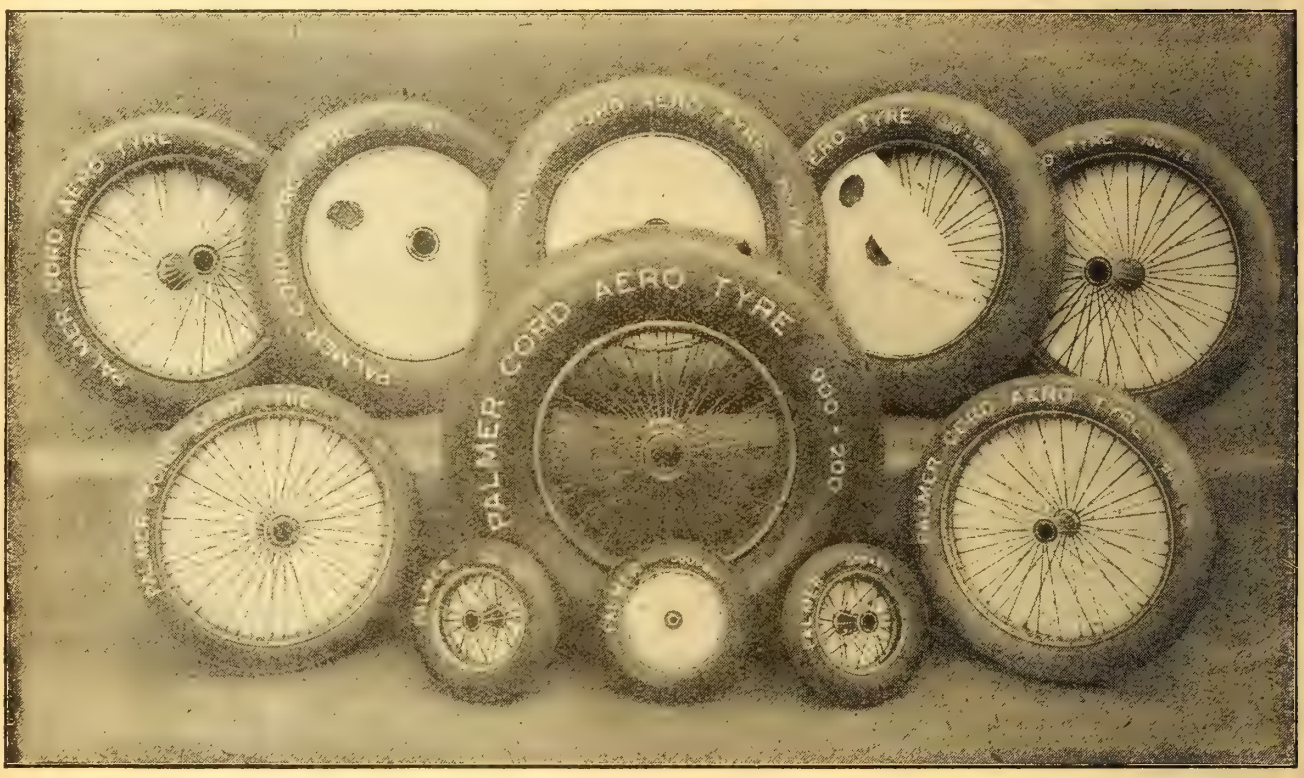
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		m/m	m/m	m/m			m/m	m/m	m/m			m/m	m/m	m/m
300×60	16	111.12	25.4	Central	700×100	33	150.	38.09	Central	800×150	†41	185.	55.	Central
,,	17	72.39	12.7	Central	,,	77	178.	44.45	132/46	,,	82	185.	55.	135/50
450×60	30	89.	31.75	Central	,,	92	185.	55.	135/50	,,	85	185.	55.	Central
575×60	21	160.	28.	Central	,,	95	185.	55.	Central	,,	106	185.	47.62	135/50
,,	34	150.	31.75	104/46	,,	96	178.	55.	132/46	,,	†205	185.	60.32	Central
,,	111	150.	38.09	104/46	,,	99	178.	38.89	132/46	1000×150	97	250.	65.4	Central
650×65	78	178.	44.45	132/46	,,	112	150.	40.	Central	,,	102	185.	55.	125/60
,,	79	178.	44.45	Central	650×125	119	178.	55.	132/46	,,	201	185.	60.32	125/60
,,	100	178.	38.09	132/46	750×125	33	150.	38.09	Central	900×200	107	185.	55.	Central
,,	101	178.	31.75	132/46	,,	77	178.	44.45	132/46	,,	108	185.	55.	125/60
600×75	21	160.	28.	Central	,,	92	185.	55.	135/50	,,	120	185.	66.67	125/60
,,	34	150.	31.75	104/46	,,	95	185.	55.	Central	,,	202	185.	60.32	Central
,,	111	150.	38.09	104/46	,,	96	178.	55.	132/46	,,	208	185.	60.32	125/60
700×75	78	178.	44.45	132/46	,,	99	178.	38.89	132/46	1100×200	52	185.	55.	116/69
,,	79	178.	44.45	Central	,,	112	150	40.	Central	,,	57	185.	55.	Central
,,	100	178.	38.09	132/46	800×150	†36	185.	55.	135/50	,,	203	185.	60.32	116/69
,,	101	178.	31.75	132/46	,,	†40	185.	60.32	135/50	,,	204	185.	60.32	Central

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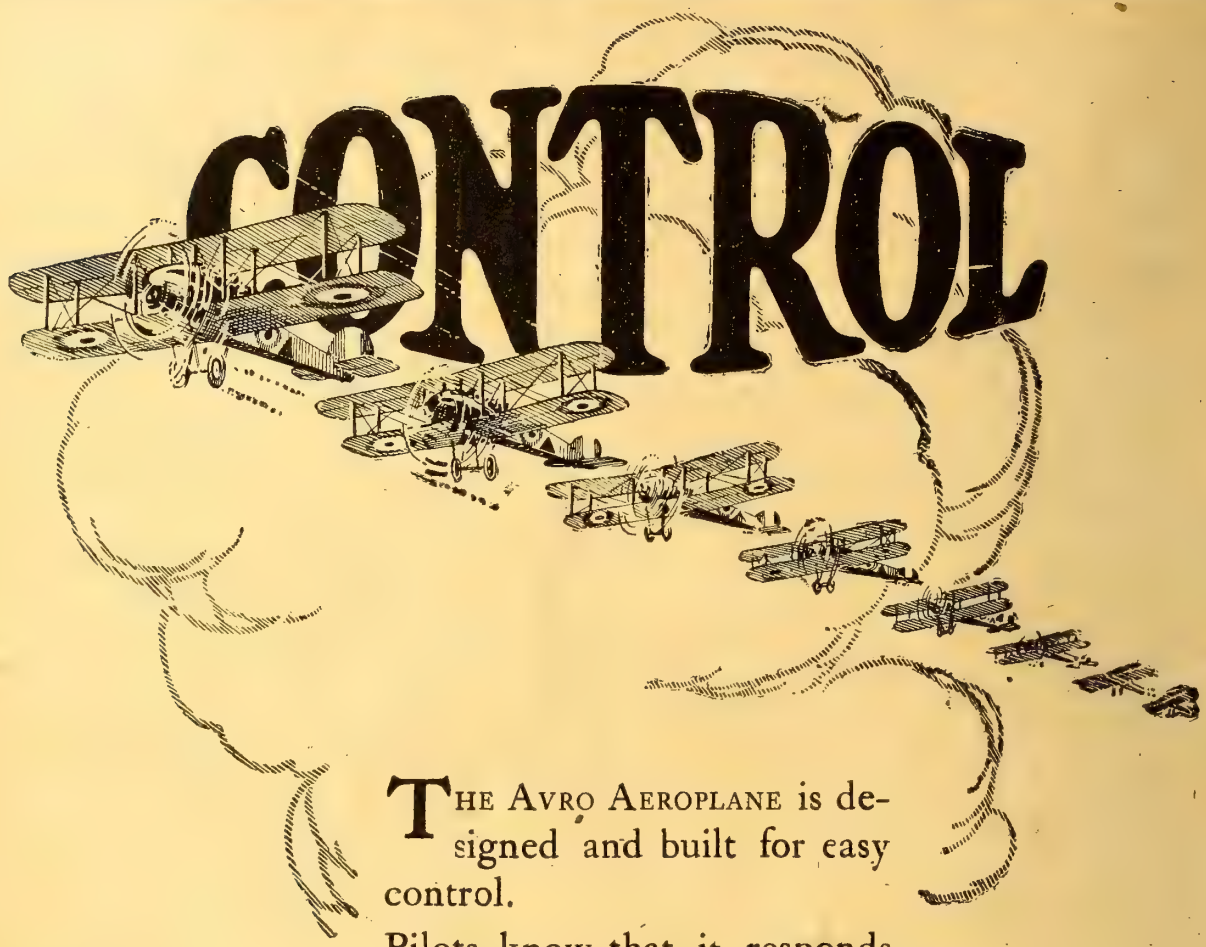
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JULY 10, 1918 VOL. XV. NO 2

The AEROPLANE

The Editorial and Advertising Offices of "The Aeroplane" are at 166, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Mayfair, 5407.
Accounts, and all correspondence relating thereto, should be sent to the Registered Offices of The Aeroplane and General Publishing Co., Ltd., Rolls House, Breams Buildings, E.C.4.
Subscription Rates, post free: Home, 3 months, 7s. 6d.; 6 months, 15s.; 12 months, 30s.
Foreign, 3 months, 8s. 9d.; 6 months, 17s. 6d.; 12 months, 35s. Canada, 1 Year, $8.
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ON HELPING THE HELPLESS.

In these days, when everybody is engaged in one way or another in war work, it is perhaps difficult for people who are already busy to find time for additional work. Nevertheless many readers of this paper ought to make it their duty to help in the matter set forth hereunder.

Helpers are sorely needed by the Royal Air Force Aid Committee and R.A.F. Prisoners' Fund. This Committee, the President and Honorary Treasurer of which is Lady Henderson, is an amalgamation of the R.F.C. Aid Committee and the R.N.A.S. Comforts Fund. The union of the two Flying Services has, naturally, simplified in some ways the operations of the two bodies, but the enormous and rapid growth of the R.A.F. has increased the work of the Committee enormously.

The most cursory glance at the Casualty Lists week by week shows the increasing number of prisoners for whom parcels of comforts have to be sent. And helpers are needed to pack those parcels.

When the young gentlemen of the R.A.F. are in Town on leave there seems to be no scarcity of charming damsels, and proud feminine relatives, ready to accompany them in their walks abroad, and at their theatre and dinner parties. It seems possible, therefore, that, if the present need were made clear to those ladies, they might be induced to give some of their time, when the gallant object of their adoration is away, to doing a little honorary work for the less fortunate members of the R.A.F. who are prisoners of war.

The Masculine Element.

If every officer of the R.A.F. who has a sister or a cousin or an aunt near London—or a mother—either by actual relationship or by adoption—would take the trouble to write to her, or them, asking that for his sake some little time every week should be given up to helping the R.A.F. Committee, one believes that in a few days all the arrears of work would be overtaken, and all the necessary parcels would be dispatched.

One merely suggests to each officer that he should think for a moment how he would himself feel if he were a prisoner of war, longing for parcels from home to supplement the meagre fare and equipment of a German prison-camp, and knew that there was plenty of stuff lying ready for dispatch in England, if only some of the fair ladies who were so kind to him when he was at home—or to whom he was so kind—would give up a few hours a week to packing it for transport to him.

To Feminine Readers.

Many of the feminine relatives of flying officers read this paper, and one feels sure that when once they appreciate the urgent need of helpers they will go and offer their services to the Committee. But one is still more sure that if officers who are happily situated at home or on active service would only themselves draw attention to the need, they would secure still more satisfactory results.

Ladies who are willing to help should go and see the Secretary of the Committee, Miss Dudley, at Surrey House, Marble Arch, close to the Tube Station, and at the corner of Edgware Road and Oxford Street.

One hears that many who would be quite willing to help are shy of offering their services because, being of humble mind, they feel overwhelmed by the distinguished names which compose the Committee. One can assure such modest ones that their assistance is as earnestly sought as is that of the pick of Debrett, and that a willing and earnest packer is more highly esteemed than is the most photographed war-worker who ever appeared serially in a luxury-paper. Therefore one pleads with all to overcome their modesty, or their selfishness, or whatever else may be holding them back, and to go to Surrey House and help in sending comforts to those who have been fighting for them.

The Matter of Money.

Another very urgent matter at the moment is that of money. The Committee *must* have more money if it is to do its work adequately. The increasing size of the R.A.F. and the proportionate increase in the number of prisoners makes the question of money more and more pressing.

The Society of British Aircraft Constructors has, to use the common phrase, come down handsomely, on behalf of both the R.N.A.S. and R.F.C., in the past, but one hopes to see them hand over far greater sums to the R.A.F. Fund in the near future. One knows that it is sometimes hard to meet a big cheque when one's only debtor, the Treasury, is heavily in arrears with payments, but one appeals to the Industry to make a special effort on this occasion.

But quite apart from the S.B.A.C. there are hundreds of rich firms who could easily afford to give their hundreds or their thousands of pounds without feeling it. Every shipping firm ought to give a hundred or so for every one of its ships which makes port safely, simply in recognition of the service done by seaplanes, airships, and kite balloons in patrolling the sea-lanes. Every big firm in London should do likewise after every air raid in recognition of the driving away of the raiders.

And, apart from the big firms again, every individual who feels that he or she has anything for which to be grateful to the Royal Air Force should contribute shillings or pounds as may best fit his or her pocket. The small coins and the big cheques are equally appreciated—according to the position of the giver.

Again one appeals personally to every reader of this paper to contribute as he or she can best afford to this very worthy object.—C. G. G.

[Contributions should be sent to Lady Henderson, Surrey House, Marble Arch, W.1.]

ON THE NEW POLICY.

Among all the multifarious pronouncements by various Ministers, Assistant Ministers, and Sub-Assistant Ministers, during the past few weeks, nothing has been more important than a certain passage from one of the two admirable short speeches delivered by the Secretary of State for the Air Force on the occasion of the Wilbur Wright lecture on June 25th. The Air Minister's words deserve far more prominence than has been given to them, for they are in effect the *Magna Charta* of the Aircraft Industry. It seems well, therefore, to reproduce them apart from the rest of the graceful and yet powerful speech in which they were embodied :—

"I desire . . . to pay a very much merited tribute to the skill, the ingenuity, and the technical capacity of the aircraft designers of Great Britain. Without going back to the early days of recrimination, which, I understand, was characteristic of all discussion involving the Royal Aircraft Factory, I wish to point out that the work done there laid the firm and solid basis for design on which most of to-day's best work is founded. No one realises that more clearly than the present Trade designers.

"But the new policy of entrusting design—pure design—to the Industry itself has been, I think, very successful, and the country owes a very deep debt of gratitude to those firms who are devoting so much study and skill to the development of our designs.

"And in saying this I would refer even more parcularly to those pioneer firms who have worked for so many years without any particular prospect of reward in any shape or form."

The Industry's Reward.

Here, indeed, is the *amende honorable* for all the past sufferings of the Aircraft Industry. It is peculiarly fitting that it should come from our first real Air Minister on the occasion of his first public appearance in that capacity before an aeronautical assembly. And one can assure the Air Minister that of all his large audience none appreciated his words so highly as did those pioneers of aviation who have fought their way through the bad times of the Aircraft Industry, either as actual aircraft constructors or as supporters—both inside the Services and out—of those sorely-tried individuals. The Aircraft Industry has indeed deserved well of the British Nation, and no better acknowledgment of the fact could be desired than the words of the Secretary of State for the Air Force.

To-day the Aircraft Industry is worthy to rank with the greatest industries in the land, and if it is less in size than the Shipbuilding Industry or the Armament Industry it is certainly not less in importance. When one remembers that four years ago, just before the outbreak of war, the Industry consisted of about a dozen firms, all practically, as the Irish say, pulling the devil by the tail for a living, its rise to its present position is little short of a miracle.

In those days the purely aircraft firms were : the Aircraft Manufacturing Co., the Avro Co., the Bristol Co., Blackburn's, the British Caudron Co., the British Blériot, the Eastbourne Co., the Grahame-White Co., Handley Page's, Hewlett and Blondeau, Martin and Handasyde's, Pemberton Billing's, Short Brothers, Sopwith's, and White and Thompson's. Also the three big armament firms of Vickers', Armstrong-Whitworth's, and J. S. White and Sons had aircraft departments.

The Aero-engine Industry was represented by the A.B.C. Co., the Green Engine Co., the British Anzani Co., the Dudbridge Ironworks, and the British Gnôme Co., the last of which was really a part of the Aircraft Manufacturing Co., Ltd. And aero-engines were also made as a side-line by the Sunbeam Co., Beardmore's, and Vickers.

There you have the whole Aircraft Industry as it was before the war, except for a few accessory firms. There was no Society of British Aircraft Constructors, and the only pretence at a trade association was the Aero Section of the Society of Motor Manufacturers and Traders, which only showed signs of life when it tried to organise aero-shows at Olympia, and afterwards grumbled at the futility of aviation because its feeble advertising failed to draw the crowds which the French aero-shows drew to the Grand Palais.

The Industry To-day.

To-day, some idea of the size of the Aircraft Industry may be gained from the "Buyers' Guide" published in the centre of this paper, though even that is necessarily incomplete. And the importance of the Industry from the commercial point of view may be gathered from the fact that the big motor-car firms, which before the war used to regard the Aero-Section of the S.M.M. and T. as a rather troublesome poor relation, now, so to speak, sit up and beg to be admitted to the select membership of the S.B.A.C., and sometimes have to be content with being merely Associate Members.

The S.B.A.C. is itself affiliated to the Engineering Employers' Federation, which is probably the most powerful federation of its kind in the world, and so the aircraft manufacturer, who four years ago was regarded as a more or less amiable lunatic who wasted good money and labour on his silly stick-and-string experiments, is to-day taken quite seriously as an engineer of the highest class. And the irony of the situation is that real engineers in good standing accept the aircraft designer as a man and brother, whereas the motor-car maker has never yet been taken quite seriously by the high-class mechanical engineer.

Truly the pioneer firms to whom the Air Minister referred in such generous terms may now feel that they have come into their own.

Honour Where Due.

Those who know how this pleasing state of affairs has come about know also what the Air Minister did not state—namely, that, great as is the credit due to the pioneer firms and to British aircraft designers for their pertinacity and skill respectively, all that pertinacity and skill would have availed nothing if there had not been someone in power who could enforce the adoption of the new policy of entrusting design to the Industry itself. It is therefore well to place on record quite clearly that the founder of this new policy, a policy for which some of us fought bitterly and acrimoniously, with much recrimination, before the war and during the early part of the war, was a certain Sir William Weir, erstwhile Controller of Aircraft Supplies under the Air Board, later Director-General of Aircraft Production under the new Air Ministry, and to-day Secretary of State and a Peer of the Realm.

The Air Minister modestly remarked that he thought the policy had been successful. The proof of the pudding is in the eating.

One has only to consider the position of the Royal Air Force on active service to-day in comparison with the position of the R.F.C. early in 1917, when Mr. Weir, as he then was, took office.

Then the Albatros biplane was doing its worst. The R.F.C., thanks to the inspiring personality of General

Trenchard, was holding its own with great difficulty. With any less great a leader in command the R.F.C. would have been decidedly the under-dog. By the end of the year the R.F.C., adequately equipped and fully supplied by Sir William Weir's new policy, had the whip hand of the enemy everywhere. To-day, under General Salmond, in whose soldierly ability the R.A.F. has implicit faith, the enemy, despite his most strenuous efforts, is still beaten in every phase of aerial activity by British aviators and British aeroplanes.

Whatever praise may be due to British designers and British constructors, it is well to recognise that to the present Air Minister is due the adoption of the policy which has permitted them to make good. So the honours may be evenly divided.

On Whom the Responsibility.

So long as the present highly satisfactory state of affairs prevails the British people may be perfectly confident as to the result of the war in the air. And the maintenance of the present state depends entirely on the numerous officials working under the Air Ministry. The Secretary of State has many duties over and above those which he had as Controller of Aircraft Supplies, or even as Director-General of Aircraft Production. If anything goes wrong in the detail work, though it may cause a serious clog in the machinery of design or supply, it may take weeks before the cause of trouble becomes evident to the Air Minister, and months before the ill effects can be removed and the machinery can be made to run smoothly again. Those lost weeks and months may mean a bad period for the R.A.F. on active service, or even the loss of a great battle, and a permanent ill effect on the course of the war.

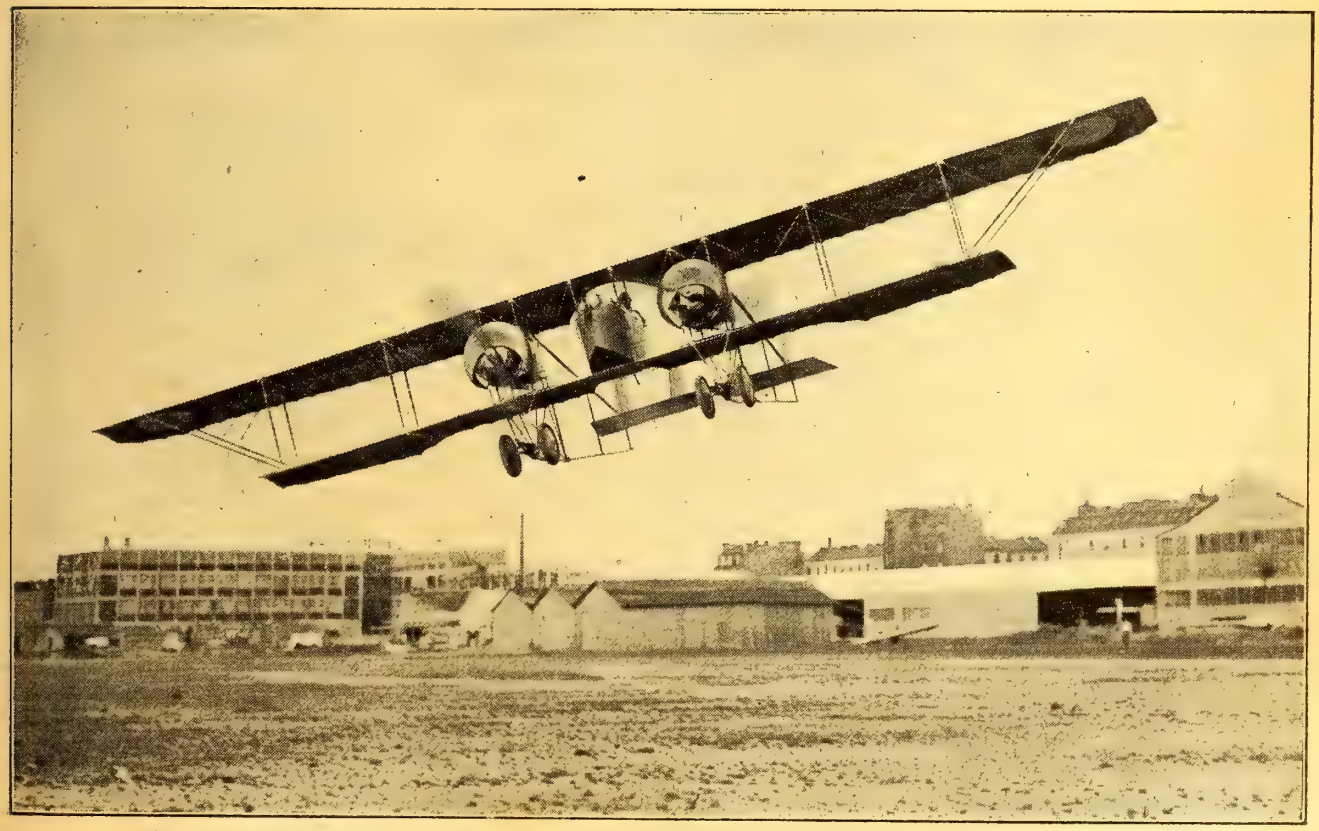
Therefore, one appeals to every official under the Air Ministry, and under the Ministry of Munitions, to sink his personal interests and his private likes and dislikes, and to work whole-heartedly for the one end, the production of the best possible aircraft in the greatest possible numbers, irrespective of everything else. Thus, and thus only, can we make certain of winning the war in the air.

Few, perhaps, realise how far-reaching may be the effect of a personal quarrel or of a private intrigue in making or marring the success of the R.A.F. Therefore let us imagine, for sake of argument, an illustration of what might conceivably happen under certain conditions, without the person who did the harm being intentionally disloyal either to his King or to his departmental chief.

A Mere Illustration.

Let us suppose that a somewhat small firm of instrument makers by some stroke of genius produced, after years of costly experimenting, that wonderful instrument for which everybody has been wishing for so long, namely, an instrument which would measure the altitude of an aeroplane above the ground, and not merely its height above sea level, and would at the same time register the speed of the machine over the ground, and not merely through the air, operating accurately in the dark or in fog as well as in clear daylight. Such a machine, which one might call a Contour-Speed-Meter, would, of course, revolutionise aerial navigation, and the R.A.F. would demand it in vast quantities. It would be made what is commercially known as a "production job" at the earliest possible moment, and the R.A.F. would, by its means, be able to do astounding things in the way of night-bombing and reconnaissance.

Now, supposing the official in charge of measuring instruments, whom we might call the Director of Meters, happened to have a personal feud against the designer of the contour-speed-meter, and resolved that neither he nor the directors of the C.S.M. Co. should profit thereby, let us see what he might do. First of all, he might try and queer the C.S.M. Co.'s pitch by bringing forward theoretical objections to the detail design and so delay the tests.



A CAUDRON TWIN TRACTOR.—These machines were the first twin-engined biplanes to be used in the war. They are now used largely in France for instructional purposes.

Then, when the C.S.M. had proved its worth, in spite of his opposition, and had broken all records for measuring instruments, he might take their designs and send them in charge of a minor official to some obscure watch-making firm to see what sort of a production job they would make of the C.S.M. That would mean more delays. And when the obscure firm's effort turned out to be a failure he might begin to feel anxious.

Then he might, by using his high official position, decree that the C.S.M. Co., because they had failed during their laborious years of experimenting to produce an ordinary watch—which they had never tried to make—should be considered unfit to undertake modifications in their own designs or to prepare the drawings for sub-contractors when the C.S.M. was put into production, even though one of the chief aims of the designer may have been to make his instrument a production job from the very beginning. That, of course, would queer the C.S.M. Co.'s pitch badly, no matter what records their instrument might have put up on test.

After that he might, for such would be his powers, decide to hand the whole C.S.M. design over to another firm altogether, and cut the C.S.M. Co. itself clean out. He might select, for example, as the "mother firm," a firm which had made a big name for itself as purveyors of very expensive and highly decorated gold watches. Firms which make expensive watches generally have a big name among official people, even though their watches may keep no better time than cheaper watches, and even though, simply because of the high price of their goods, they are less likely to know anything about production jobs than plenty of firms who do not cater for the business of the *nouveau riche*. Still, by virtue of the big firm's name and his own official position, the Controller of Meters might freeze out the C.S M. Co. altogether, and so wangle things that his gold-watch friends took all the credit and all the profit when at last the C.S.M. was made satisfactory as an instrument and as a production job at the same time.

The Snag.

Doubtless all this would be very patriotic and highly satisfactory, and would lead to further promotion if it all worked out to schedule. But it would be very awkward if the gold-watch firm let him down, simply because their lack of experience, both of delicate design and of production jobs, made it impossible for them to produce or to show others how to produce the C.S.M.

He would have caused repeated delays in production, and meantime the R.A.F. abroad, among whom news of good things being prepared for them travels remarkably quickly, would be writing to all sorts of people at home, asking when their C.S.Ms. were going to arrive Rude people might even begin asking questions in Parliament, which would inflict unnecessary annoyance and work on the Air Minister.

Whatever the Director of Meters did could no doubt be explained on the highest patriotic grounds, but it would be hard to justify his actions if the original instruments made by the C.S.M. Co. continued to beat records, while those made by the gold-watch firm refused to function, or did so inefficiently, or if the alterations in design made by them complicated, instead of simplifying, the manufacture of the instrument as a production job and so delayed output still further. Verily the path of the Government official is beset with snags, and therefore one hopes that this purely suppositious illustration will be studied with care, as an example of what to avoid.

The New Policy's Safeguard.

One trusts that such a business could not occur, for it would be absolutely opposed to the Air Minister's new policy of trusting the Trade designer, besides being ethically dishonest. But, human nature being human nature, it *might* happen with an instrument, or a bomb, or a gun, or an engine, or anything, if every official were not filled with the highest patriotic motives, or if, to put it at its lowest, every official did not realise that honesty is the best policy, simply as a policy. So much excellent work has been done in the Air Ministry during the past six months, and under the Air Board during the preceding twelve months, and so many inefficient or intriguing officials have left, for everybody's good, that it would be a thousand pities if a fresh lot of intriguers or inefficients managed to work their way into responsible positions and thus hamper the work of the R.A.F. during the critical months to come.

The Secretary of State for the Air Force has probably as shrewd a mind as ever a great officer of State has possessed. Moreover, he is remarkably quick to act when he learns that anything is wrong. But he cannot be everywhere at once, and he cannot know the innermost working of every department. One can, therefore, only hope that as soon as anything is found to be going wrong, information on the subject may reach him somehow, by some road, at the earliest possible moment. When once he knows, the wrong may be considered as set right.

He has himself declared the trust which he places in Trade designers: that trust has never been betrayed by the Aircraft Industry. And one makes bold to say that it never will be, unless officialdom of the old sort again breaks out and spoils the work of the British designer.

C. G. G.

A NOTABLE APPOINTMENT.

The Aircraft Industry, especially those concerned with the production of new types of aeroplanes and their appurtenances, will be interested to learn that important changes have been made of late in the matter of certain experimental work. The command of the leading experimental station has been given to an officer who has not only had prolonged experience of active service, having been at the front practically ever since the outbreak of war, but who is one of the pioneers of British aviation, both on its scientific and on its practical side. The amount of scientific knowledge, mechanical skill and active service experience over enemy fire which this officer has acquired during his distinguished career is, at any rate, unusual, and when his appointment becomes known to the Industry—one cannot, of course, mention his name here—it will increase still further that feeling of confidence in the sound common sense of the Air Ministry, as at present constituted, which has done so much to improve the equipment of the R.A.F. during the past year.

INVENTIONS AND DISCIPLINE.

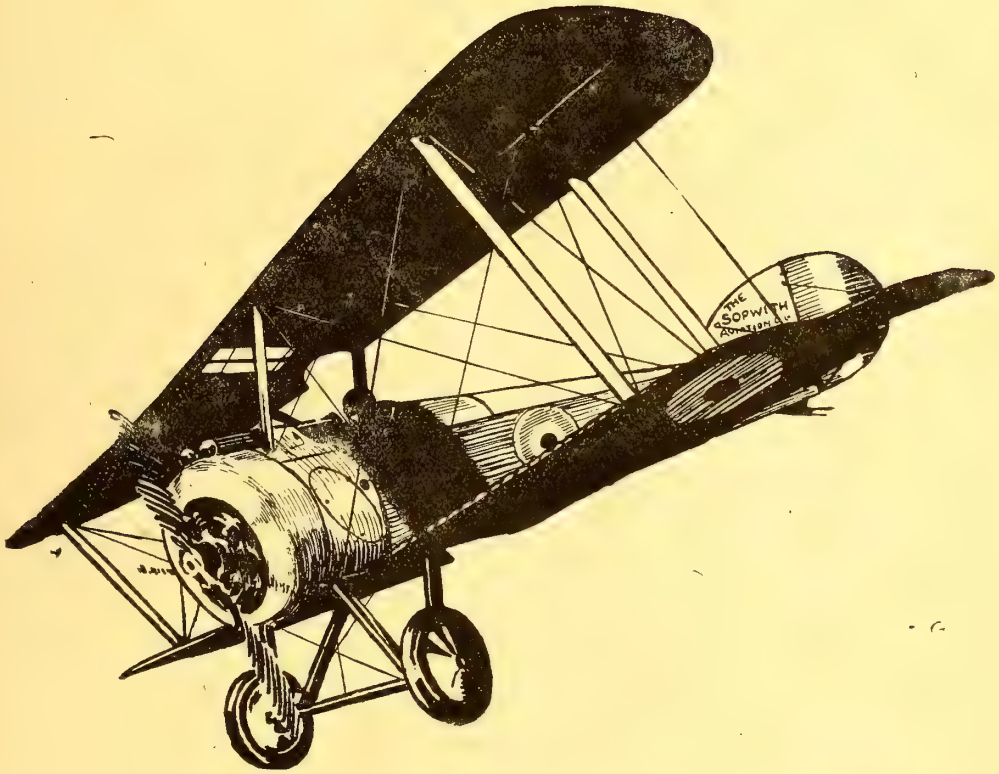
The following Army Order has been issued: "Cases of unauthorised trials and inspections of new inventions have recently been brought to the notice of the Army Council. Every encouragement must be given by superior authorities to officers and soldiers under them to put forward new ideas which may be of military value, and all information of such a nature received from any source should be forwarded through the proper channel to the War Office. But Paragraph 1,379 of the King's Regulations, which is here repeated for general information, must in all cases be rigidly adhered to: 'All inventors suggesting new patterns of military stores or alterations to them are in the first instance to be referred to the War Office. In no case will generals commanding authorise the trial of any invention without first obtaining sanction from the War Office.' Failure to comply with this Order often leads to the expression of unreliable opinions concerning existing military equipment. This frequently results in quite unjustifiable dissatisfaction with, and loss of confidence in, such equipment, and is most detrimental to the *moral* and fighting efficiency of the Army."

[Doubtless similar regulations govern inventions by members of the R.A.F.—Ed.]

U.S. AIRCRAFT FINANCE.

A report from Washington, dated July 3rd, states that the Military Affairs Committee has adopted the plan of its director, Mr. Ryan, for the creation of one or more corporations for the purchase, production, manufacture, and sale of aircraft and aircraft equipment and material. An appropriation of £20,000,000 is proposed for the establishment of a central aeroplane factory.

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THE ROYAL AIR FORCE IN PEACE TIME.

SOME REFLECTIONS—I.

BY HENRY FORESTER.

"Ah! Love, couldst thou and I with Fate conspire
To grasp this sorry Scheme of Things entire,
Would we not shatter it to bits and then
Remould it nearer to the Heart's desire?"

Omar Khayyam.

All things in this world draw ultimately to an end. In the fullness of time the present hostilities between the Great Powers of Europe will cease, and the world for a space at least will return to peaceful ways. There is a Committee sitting in these days to decide with exactitude what condition is to be considered the end of the war, whether it is to date from the moment of the signing of the declaration of peace or whether the completion of demobilisation is to be the beginning of another period of normal existence. At least this is what one imagines to be the reason for the existence of the Committee.

As Committees rarely make decisions of importance, it is to be assumed for the purposes of this article that peace will again be the habit of the land from the last day of demobilisation. This time may come at any period within two years of the actual suspension of hostilities. Wars may start in a day from causes which were the effort of a moment, but many years must pass before even the apparent effect of warfare has passed away. Each section of the community has to adjust itself to the new conditions, for war leaves no nation as it found it.

Each individual must remodel his outlook on life to correspond with the changed ideals both in public and private life. The *flâneur* must find new methods of passing easily through existence, since for a time at least the old sinecures and the old pleasures are no longer vivid for his use. The worker, returning from his temporary trade of slaughter or of profuse money-making, will find that once again he will be paid in accordance with his skill and worth in the world, and that, in view of an over-crowded labour market and a heavy taxation, his grumbles and conspiracies will no longer possess the almost supreme power gained in months of tension and of national peril.

Changes to Come.

The Royal Air Force will find the change from war to peace to be greater than any previous alteration in the tale of its brief existence. Unlike either of the other great Services, it has never known peaceful days. War has been its only experience. War is the natural condition of a fighting Service, and the main difficulties attending the progress of military forces are to be found in times of peace.

In peace, the Services are continually training for war, with no opportunity of putting their prowess to an adequate test, nor of proving the soundness of new principles. Promotion is slow, the work is arduous, and there is little incentive to feed ambition. The regulations as to personal conduct which are allowed, often ill-advisedly, to lapse during the strenuous days of war are imposed with strict consistency in peace-time.

It is never safe to prophesy in what manner the future will alter a political body, and it is therefore not proposed to suggest the possibilities in regard to the Air Council itself. The form of supreme government in the Army and the Navy has altered with consistent frequency during the past centuries, and it is unlikely that the Royal Air Force will be exempt from similar periodic change.

It may be found that the mere creation of a separate Service does not imply a complete severance of interests between the new Force and the two fundamental military Services of the country. Independent action by the Air Force will increase as the years pass by, but it is nevertheless certain that large contingents of the R.A.F. will be required to act with the Army and Navy in all future campaigns.

Aeronautics cannot be divorced from the scheme of war as practised by the old Services, and it will be necessary to train great numbers of pilots in the respective principles of the Army and the Navy. It is therefore possible that seats will be allocated on the Air Council to a distinguished representative from each Service. In such manner could atonement be made in some degree for the original mistake of partition.

The Three Great Branches.

If the present drift of affairs continues, it is likely that the Royal Air Force will possess three great divisions: a contingent set aside and specially trained for independent work under the conditions of aerial strategy which will by then be formulated; a contingent working only with the Navy and educated under such principles of naval warfare as exist; and a third and last contingent which would be allocated to the Army and would continue to work in accordance with the traditions so well maintained during the present war.

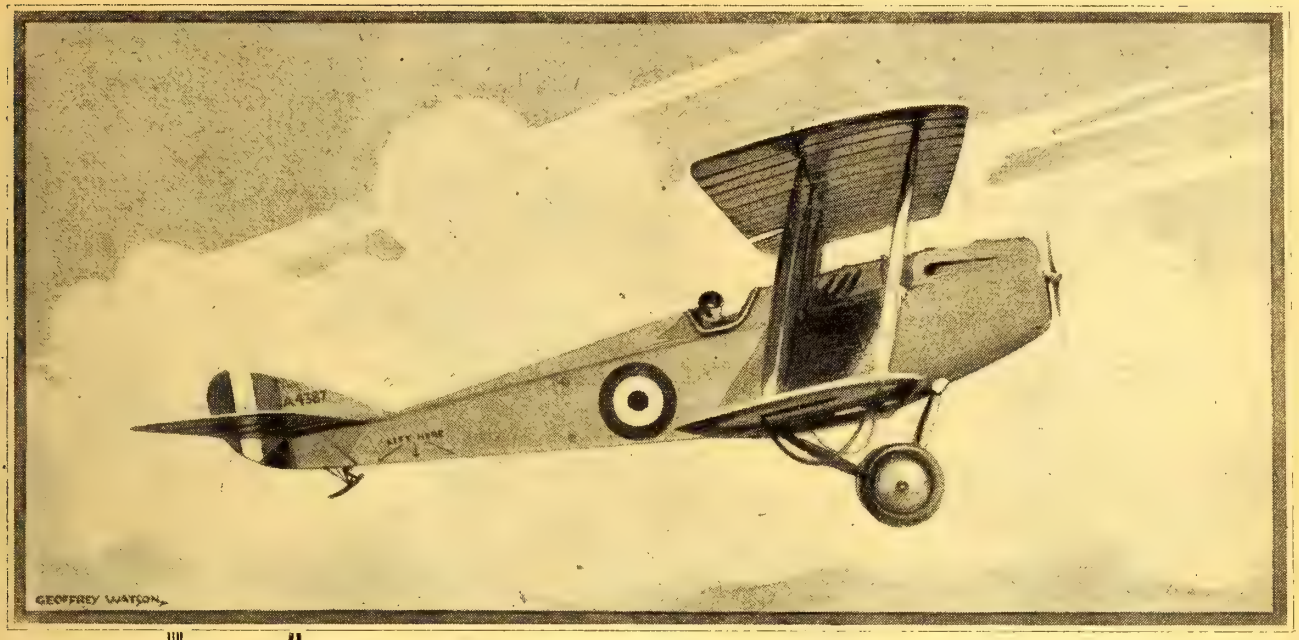
Under the conditions of peaceful days the Royal Air Force will draw its officers direct from the civil population, and not mainly through the other Services as at present. There should be little difficulty in maintaining an adequate supply of officers, and it is unlikely that the newer commissioned personnel will be in any way inferior to that at present serving in the Air Force.

While there is little question that each candidate for a commission will be required to learn to fly, just as each Army officer is taught to ride while he is still at Woolwich or Sandhurst, yet it is unlikely that skill in the practical side of aviation will be considered as a primary qualification for appointment. In a very few years the non-commissioned ranks and the rank and file will be able to supply all the pilots that are necessary for the Service, while the officers will be able to devote themselves not only to the technical side of their profession but to a close study of the art of war.

Osborne, Sandhurst, and Woolwich will, it is presumed, be no longer available for the training of cadets for the Air Force, and one or two of the present establishments for training pilots and observers must consequently be turned into permanent training centres for the future leaders of the Air Force. The parallel with Army institutions may be continued by having one school for cadets desiring to join the technical branches of the new Service and another for the branches corresponding to cavalry and infantry in the Army. The cynic would say that the two classes are best kept apart.

The Royal Air Force will become a profession for the best youth in the land in a manner impossible to the Army. As in the Navy, but to a greater degree, officers of the Air Force will be able to live on their pay without any external help from sorrowing parents or guardians.

Many men possessing all the qualifications for a soldier's life have regretfully been compelled to enter other and less congenial professions owing to the preliminary lack of money. Not only is R.A.F. pay at least adequate, but the pensions given after the customary





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periods of service will be correspondingly larger than those granted to soldiers and sailors.

The difficulty in the future will be, not the obtaining of officers, but the selection from the numbers who will undoubtedly come forward. The surplus—and there is every probability that there will be a surplus—might be induced to enter whatever reserve for the Air Force may be formed.

RANK AND FILE.

As regards the rank and file, there will be no greater difficulty in obtaining recruits. The pay and the conditions of service are sufficiently good to attract the best stamp of man into the Force. Here, too, it is unlikely that the Air Force will ever suffer from the same shortage of recruits as has the Army on many occasions during the long periods of peace which have added placid charm to the history of England during the past century.

There should be no difficulty in building up an adequate reserve, provided the period of service with the colours remains reasonably short in duration.

In addition to the resources as to personnel available from the normal reserve, another reserve, somewhat similar in character to that of the Royal Naval Reserve, can be formed in due course from the men employed in the aeronautical industry. Within a few years of the end of the war, aerial transport will be common, and many thousand aeroplanes, presumably owned by commercial corporations, will be carrying mails and cargo in all parts of the globe.

Such personnel will be as highly trained in the maintenance and the navigation of aircraft as are sailors in the case of the humbler vessels of the sea. A large percentage of the men engaged in aerial transport could be released for service in the Air Force during a future war. They would be employed on such work as they were acquainted with in their customary manner of life. These men would be capable, without additional training, of carrying out any duties on military aircraft other than those concerned in actual fighting. Even aerial gunnery and kindred subjects would be possible to them if they underwent short periods of annual training.

A RESERVE OF OFFICERS.

Similarly, the officers on commercial aircraft could, if they so desired, enter this form of reserve, holding special commissions and wearing a uniform or badges indicating their liability to serve the King in times of need. They should, however, be paid a retaining fee in order that the inducement may be constant. Those who have seen the present dress of the Royal Air Force will agree that there can be no lure in the uniform. Reserve service of this nature would probably carry with it the obligation to undergo a six months' course of training on first receiving a commission and a course of one month in every succeeding year. In this manner their elementary knowledge of the art of war would be maintained.

In addition to this Special Reserve (to borrow a title from the Army) a Volunteer Air Force may be found desirable. There are many men employed in the ordinary avocations of life who would desire to become aviators, and yet are unable to leave their trades and professions permanently. Some of them, perhaps, would possess enough money to buy an aerial yacht with which to amuse themselves and to annoy the rest of sober humankind. Others would be able to provide a certain proportion of the cost of training themselves in aerial matters, but not enough to enable them to fly entirely at their own expense.

All men so situated might be permitted to join a Volunteer Air Force in which the country would undertake to cover the expense of training in return for a liability on their part to serve at home in the Air Force in case of war, or on the mail routes to replace personnel withdrawn for the more serious prosecution of aerial war.

(To be continued.)

SOUTH AFRICA'S CONTRIBUTION.

At Brooklands aerodrome on July 6th the Hon. H. Burton—one of the representatives of the Union of South Africa in the Imperial War Cabinet—presented to the Royal Air Force two aeroplanes as gifts from South Africa. One was subscribed for by the members of the Benoni Branch of the Overseas Club and Patriotic League, a society which has already raised between £780,000 and £790,000 for patriotic purposes. The second machine was given by Mr Walter Greenacre, of Durban, a member of the Union Parliament, in recognition of the splendid services of South African aviators.

Maj. Baird, M.P., Parliamentary Secretary to the Air Ministry, in accepting the gifts, stated that there were already 3,000 South Africans in the Royal Air Force, and he hoped that before long it would be possible to have a South African Flying Corps.

One of their squadrons had done splendid work both in South-West and East Africa, where unfortunately many of its members were laid low by malaria. As soon as the squadron was at full strength again it was coming to help on the Western front.

After the ceremony an Australian pilot took his seat in the "Benoni," and a Canadian assumed control of the "Durban," and gave a very fine exhibition of flying.

Among the officers present were Maj.-Gen. F. C. Heath-Cauldwell, Lt.-Col. I. M. Bonham-Carter, Lt.-Col. R. W. Roylance, Maj. Peer Groves, and Maj. J. Stewart, Commanding Brooklands Aircraft Acceptance Park.

The Overseas Club and Patriotic League were represented by Mr. W. A. Bulkeley-Evans (Vice-President), Sir Ernest Birch, Sir John Taverner, Sir Charles J. Tarring, Sir Edward Rosling, Mr. Algernon E. Aspinall, and others.

THE FLYING SERVICES FUND.

A meeting of the Committee of the Flying Services Fund was held on Thursday, June 27th, when there werepresent:—Major T. O'B. Hubbard, M.C., R.A.F., in the chair, Mr. Chester Fox and Lt. Comdr. H. E. Perrin, R.N.V.R., secretary.

The following grants and allowances were made:—

(64) An allowance of £5 a month for six months to the widow of a Flight Commander, R.N.A.S., who was killed on active service.

(57) An allowance of £2 a month for twelve months to the widow of a 1st Class Air Mechanic in R.F.C., who was killed on active service.

(13) An allowance of £4 a month for twelve months to the father of a Lieutenant, R.F.C., who was killed on active service.

(20) An allowance of £5 a month for twelve months to the widow of a Serjeant in R.F.C., who was killed on active service.

SUBSCRIPTIONS.

Total subscriptions received to June 18th, 1918...	£12,760 15 11
Staff and workers of Gwynnes, Ltd. (64th contribution)	9 13 3
Staff and workers of Gwynnes, Ltd., (65th contribution)	9 17 8
Total, July 2nd, 1918	£12,780 6 10

OBJECTS.

The Lords Commissioners of the Admiralty and the Army Council having signified their approval, The Royal Aero Club has instituted and is administering this Fund for the benefit of officers, non-commissioned officers and men of the Royal Air Forces who are incapacitated on active service, and for the widows and dependants of those who are killed.

Subscriptions should be sent to the Secretary, The Royal Aero Club, 2, Clifford Street, Bond Street, W.1.

THE DEATH OF MAJOR MITCHEL.

It is reported that Major Mitchel, the former Mayor of New York, has been killed at Gerstner Field, Louisiana, U.S.A., while flying in a scout machine which he was piloting.

A military funeral was held in New York

The "Times" says:—In his successive terms as Mayor of New York, a position which is equivalent to being the active head of one of the largest business corporations in the world, Mr. Mitchel displayed signal ability along sound lines of progressive reform and beyond doubt achieved a reputation which might have made him "Presidential timber."

By his death, the Allies lose an enthusiastic supporter. Even before America entered the war he had felt it his duty, as a matter of example, to go through the courses of training at the first officers' training camp started by Gen. Wood and Col. Roosevelt.

New York particularly, and the United States generally, have lost one of their most promising citizens.

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THE NAVY LEAGUE AND THE AIR.

The future policy of the Navy League, as set forth in a circular dated July 1st, 1918, is declared to be directed towards the achievement of the following objects :—

1.—The dissemination among the peoples of the Empire and British subjects in all parts of the world exact knowledge upon the provision and use of Sea Power as the keystone of British National and Imperial policy.

2.—The advocacy of an all-powerful Navy, Air Force, and Mercantile Marine as the factors essential for the security of the Empire and the restoration of Britain to its rightful position as Mistress of the Seas.

3.—The immediate reconstruction of our mercantile tonnage to at least the pre-War standard before any foreign orders for the building of merchant ships are executed, and the demand that there shall be no transfer of British shipping to foreign owners or flags until British mercantile supremacy shall have been restored.

4.—The application of steady pressure upon Parliament and the Government, through the education of public opinion, for closer co-ordination between the Royal Navy and the Mercatile Marine with a view to the exigencies of war.

5.—The support of all just claims of officers and men of the Royal Navy with regard to pay, pensions, and prize money.

6.—The stimulation of interest among the teachers and children of all classes of schools in the Empire in the Sea and Air Services as dominant factors in Imperial existence and prosperity.

7.—The extension of the Boys' Naval Brigade Movement and the establishment of proper training institutions with the view to the preparation of boys for a sea career whenever possible, for the elimination of aliens from the British Mercantile Marine.

8.—The administration of the funds provided at the instance of the League at home and overseas for the relief of the dependents of the men of the Sea Services who have lost their lives in the war, and for the education and apprenticeship of their children.

[The objects are wholly praiseworthy, and one is glad to see that the Navy League realises the importance of the Air Force in relation to the Navy. One hopes some day to see the Navy League agitating for a Royal Naval Air Service as an integral part of the King's Navy.—Ed.]

AN AIR FORCE CANDIDATURE.

Lt.-Col. Cecil L'Estrange Malone, R.A.F., was adopted on July 3rd as the prospective Liberal candidate for East Leyton, one of the constituencies carved out of the Romford Division of Essex.

Lt.-Col. Malone, who is 28 years old, is one of the most distinguished of our younger flying officers. He was a lieutenant in the Navy when he took to flying, and he has been identified with the Royal Naval Air Service throughout its career. He was actually the twelfth naval officer to become officially an aviator, his certificate being granted in March, 1912. During that year he flew a Short biplane from a moving warship, and later took part in military manœuvres on a double-engined Short biplane—the first official use of a multiple-engined aeroplane—the particular example being nicknamed the "Field Kitchen." He was on the staff at the Admiralty at the outbreak of war, but he immediately took command of a seaplane-carrier, and on Christmas Day, 1914, commanded a flotilla of carriers, from which the seaplane raid on Cuxhaven was started. For his work in organising this raid he was specially mentioned in despatches. Later on he commanded seaplanes in the Eastern Mediterranean, and was decorated for his services. He has since seen service with the Grand Fleet, and has held an important command at a home station as a Wing-Commander, R.N.

He supports the present Government, and is a member of the Executive of the Industrial Reconstruction Council. One gathers that he is by no means committed to what is known politically as "the Old Gang"—namely, Messrs. Asquith and Co. One hears locally that Col. Malone, in fact, captured the Leyton Liberal society in face of the opposition of the local party bosses. He is an Irishman, belonging to a well-known County Sligo family, and is certainly one of the most brilliant brains of the younger senior officers of the Air Force. If elected he should be a decided acquisition to the House of Commons, which at present contains no member with intimate personal knowledge of active service flying.

THE AIRCRAFT STRIKE.

In "Aeronautical Engineering" will be found a statement concerning the strike of aircraft employees—one cannot at the moment call them workers—which broke out last week. It seems that the strike is not likely to do much harm, because, happily—thanks to the prevision of the Aircraft Production Dept.—there happens to be a goodly reserve of aeroplanes in hand.

It will be remembered that even after the heavy losses in the German push beginning on March 21st the Aircraft Production Department was able to replace all the lost machines and increase the number in action very considerably within a few days, from the reserve stock then in hand. Therefore there seems to be no need for immediate anxiety in this instance.

The interesting fact that so many young and athletic men, such as have been reported as doing such excellent performances at Aircraft Workers' Sports, are walking about doing nothing to get on with the war should afford the Ministry of National Service an excellent opportunity of putting some thousands of them into the Army, where they ought to have been three or four years ago. There are quite as many thousands of men between 40 and 50 years of age who, under the new Military Service Act, would be available to take their places, and would do so gladly.

The Minister of Munitions wishes it to be known :—

1. That the strike is not only illegal, but is unauthorised by the Trade Unions.

2. That arbitration was accepted by the Trade Union leaders, and has been brought to nought by certain persons not representative of any recognised Labour organisation.

3. That the interruption of work is a serious interference with the output of munitions.

AIRCRAFT IN THE HOUSE.

On July 4th **Sir J. Butcher** asked the Under Secretary for Foreign Affairs under what circumstances a number of aeroplanes were being supplied by this country to the Chilean Government, and whether the action of His Majesty's Government was not calculated to cause apprehensions in other Latin American Republics.

Lord R. Cecil : The facts referred to in the first part of my hon. friend's question may be easily stated. Our Admiralty were anxious to obtain a Chilean battle cruiser building in this country. The Chilean Government assented in the most courteous and obliging manner to the surrender of the vessel. But they pointed out that their action had the inevitable effect of disorganising their whole naval programme and effecting an important reduction in their naval strength. For this no payment based on the cost of the ship could afford full compensation; and they suggested that the gift by His Majesty's Government of a few aeroplanes in addition to the money price would be gratefully received. We were glad to meet their wishes. I am sure that my hon. friend will agree with me that the opinion hinted at in the last part of the question has not any solid foundation. In the first place the effect of the whole transaction, consisting as it does of the gain by Chile of a few aeroplanes, and the loss by Chile of a battle cruiser, can hardly cause alarm in any of Chile's neighbours. In the second place, I hope and believe that public opinion among the great Republics of South America has reached a stage which will make it utterly repugnant to them to settle disputed questions by a resort to war.

A SERIOUS CHARGE.

At West London Police Court on July 4th, before Mr. Boyd, Thomas Louis Edwards, 34, Staff Captain, R.A.F., of Wigmore Street, W., and Francis McGregor, 19, a private in the A.S.C., were charged with stealing and receiving 18 gallons of petrol belonging to the Government.

It was stated that on Wednesday morning McGregor took nine petrol cans, which had been marked previously by the police, from the garage at Shepherd's Bush to a place at Wigmore Street, owned by a firm in which Edwards was a partner. He was followed by two police officers. McGregor took the petrol into the garage, and received from the woman secretary a cheque for £2 15s., signed "T. L. Edwards." McGregor was taking the cheque across to the bank, when he was arrested.

Both men were committed for trial, Edwards being allowed bail.

A USEFUL POET.

Major Gabriele d'Annunzio having again merited decoration has had to be awarded the Military Cross of Savoy in place of the seventh silver medal, more than six of which are not contemplated in the military regulations of this country. Three others due to him appear to have been changed to bronze to avoid the difficulty. The motive for which the M.C. of Savoy has been conferred on him is of noteworthy interest and lengthy. Excerpts as below—

"On a big bombing aeroplane he accomplished (in August, 1917) what no man ever did before. In one day he dropped 40 bombs and fired 1,300 rounds from the mitrailleuses, remaining for 50 minutes at 300 metres above the battlefield and descending as low as 50 metres above the enemy forces." It is claimed that he thought out the co-operation between the land and air forces which was a feature of the operations of that month.

"On September 4th Major d'Annunzio was flying non-stop for 9¼ hours, covering 1,000 kilometres in execrable atmospheric conditions. This flight was made on a machine expressly fitted up for him to test, in view of a flight to Vienna by him thought out, prepared and begged for."—T.S.H.

PICTURES AT PRINCE'S.

Those who are interested in airships will find particular interest in the exhibition of pictures which is to be opened at Prince's Galleries, Piccadilly, to-morrow (Thursday), July 11th. One is told that a number of excellent pictures of airships are to be shown, and that apart from their artistic merit they are of considerable technical interest.

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THE POSSIBILITIES OF PARACHUTES.

On June 13th, Major Baird, M.P., Parliamentary Air Secretary, admitted to the House and the world at large that experiments had been carried out with the dropping of parachutes from aeroplanes, but implied that no practical method had yet been devised for their use. He then side-tracked the issue by saying that the great majority of accidents occurred under circumstances when no kind of parachute would be available—which is about as sensible as saying that as the great majority of wounded soldiers would not die of tetanus it is not worth while inoculating them.

If one did not know that politics and procrastination go so closely hand in hand, one would feel surprised that Major Baird was so little impressed with certain cinematograph films which he has seen showing men jumping from aeroplanes with the aid of parachutes, and, in every case, alighting unharmed. One has no evidence that Major Baird actually watched the moving pictures, or whether he found the flicker too trying for his eyes, but he was certainly present at the performance, and it was certainly his duty to watch and learn when he had the opportunity.

Many months ago one was privileged to view these same interesting films, and there being no interposition of that Parliamentary fetish, the political monocle, which seems at times to be as accommodating in its blindness as Nelson's eye at Copenhagen, one was mightily impressed with the record of patient achievement placed upon the screen.

This bioscope display took place some 18 months ago in the City office of Mr. E. Calthrop, who had been working unostentatiously with the Guardian Angel Parachute for a very long time.

He had persuaded a Government Department to allow his invention to be tested in an aeroplane, and after many experiments had been made with ballast, permission was granted for the dropping of men, and since the successful achievement of the first fall, endless drops have been made from aeroplanes, airships and kite balloons, with never an accident.

Mr. Calthrop's aim in prosecuting his researches was to evolve a parachute which would open infallibly after a defined drop of minimum length, and whose operation was mechanically certain.

One is not disposed at the moment to enter into an elaborate technical description of the Calthrop parachute.* It is sufficient to say that it is packed between a pair of circular discs about two feet in diameter, and that as it unfolds the suspensory tapes and the parachute itself come outside the periphery of these discs, an action which positively encloses a cylinder of air and makes it impossible for outside air-pressure to close the neck of the parachute. The system of packing is such that the whole action is progressive, and it seems impossible that anything should jam.

All this was demonstrated 18 months ago and more, but as the experiments were then being conducted under official auspices, it was impossible for a member of the general public to witness or write about the tests.

Mr. Calthrop has now bought an aeroplane, and obtained the use of a civilian aerodrome, which makes it possible to describe the operation of his parachute, as it can be seen by any man in the street.

A few days ago one was invited to witness some drops. Two parachutes were stowed in that section of the fuselage in the two-seater tractor biplane which comes behind the pilot's back. The cross bracing had been removed, and the section adequately reinforced.

It was arranged that the first experiments should be with ballast. A weight of 12 stone was attached to the bridle of the parachute and clipped to a releasing gear which could be worked from the pilot's seat.

Captain Paize, who is doing the flying work for the firm, did a single circuit to an altitude of 300 feet, pulled his lever, and then things began to happen—actually they took 2½ seconds, but they take longer to describe.

The weight fell off its perch on the chassis, tensioned the bridle, which pulled the folded parachute in its aluminium launching discs bodily out of the fuselage from which it dangled by a length of cable well below the landing carriage, exactly like a dustbin-lid hanging by its handle. Then a cylinder of tapes shot downwards from the circumference of the disc, followed by a cylinder of silk which extended steadily, and then expanded rapidly into the regular bowl-shaped parachute, as it is commonly known, and the load was brought gently to the ground. The experiment was repeated with the second parachute at a still lower altitude, and once more the apparatus functioned with a speedy deliberation, from which the jerking bang open which one has noticed in other parachutes was absent.

The demonstration was wonderfully impressive, because of the smoothness with which the parachute opened, and the remarkably short drop and lapse of time from the moment of release.

The firm's regular parachute jumper was unable to be present, but so convincing were the ballast tests that two members of the public volunteered to make drops. Full preparations were made, but disappointment resulted, because for some unknown reason the aeroplane's engine refused to re-start. One trusts, however, to record the results of drops with a human freight in a subsequent issue.

The arrangement of the parachutes in the demonstration aeroplane is admittedly primitive, and only permits descents to be made when the machine is in a normal attitude, but Mr. Calthrop has devised a perfectly workable scheme which makes it possible to launch the apparatus in any position which an aeroplane can assume. For obvious reasons one would not describe so advanced an arrangement.

The most persistent objection which has been raised against the Guardian Angel Parachute is that it opens very quickly, a circumstance which most people would consider an advantage. But should this objection be maintained, Mr. Calthrop can remedy it on demand.

The whole apparatus has been scientifically designed to meet the various stresses and strains which are imposed, and structural failure seems as improbable as functional failure.

A prominent firm at Lloyds which makes a speciality of aircraft insurance has offered to reduce its premiums by 20 per cent. in respect of pilots who fly only aeroplanes equipped with Guardian Angel Parachutes.

In these days of actuarial science that alone should be an adequate guarantee of the soundness of the apparatus, and should help the authorities to make up their minds on a subject about which active-service pilots and practical aviators made up their minds so long ago that if the decision had been made when it should have been, every Service machine would now be carrying a parachute just as every ship carries lifebuoys.—W. L. W.

* Regular readers of The Aeroplane are invited to refer back to the Patents Index in the issues of Jan. 30th and Feb. 6th, which contains particulars of certain of Mr. Calthrop's inventions.

AMERICAN PRODUCTION.

The "Times" correspondent, cabling from New York on July 7th, reports :—

The first bombing aeroplane completely manufactured in America, equipped with the Liberty motor, has made its first official flight in the presence of officials of the British and American Governments. Its success was complete.

The trial flight was made by Colonel William Sempill [The Master of Sempill.—Ed.], British Air Force [*Anglicé*, Royal Air Force.—Ed.], pilot, and Captain Waller, R.A.F., observer, and other passengers were General Kenly, Chief of the Department of Military Aeronautics, Mr. Samuel P. Langley, and Mr. Dawkins, manager of the Handley-Page works, and a cinematographer for the Committee of Public Information. The aeroplane, named the "Langley," in honour of Professor Langley, the father of modern aeronautics, left the ground beautifully, climbing in circles.

The launching was preceded by a luncheon, at which Sir Henry Fowler, Deputy-Director of Aircraft Production in Great Britain, said :—

> I regard the completion of this aeroplane as an earnest of the work done in the United States to build up our ascendancy in the air. We are going to have an overwhelming superiority in the air, and the one thing that will win it is the finest aeronautical machine ever built—the Liberty motor. No engine was ever more truly named. [Did he really say that?—Ed.]

Mr. John D. Ryan, Director of Aircraft Production in the United States, said :—

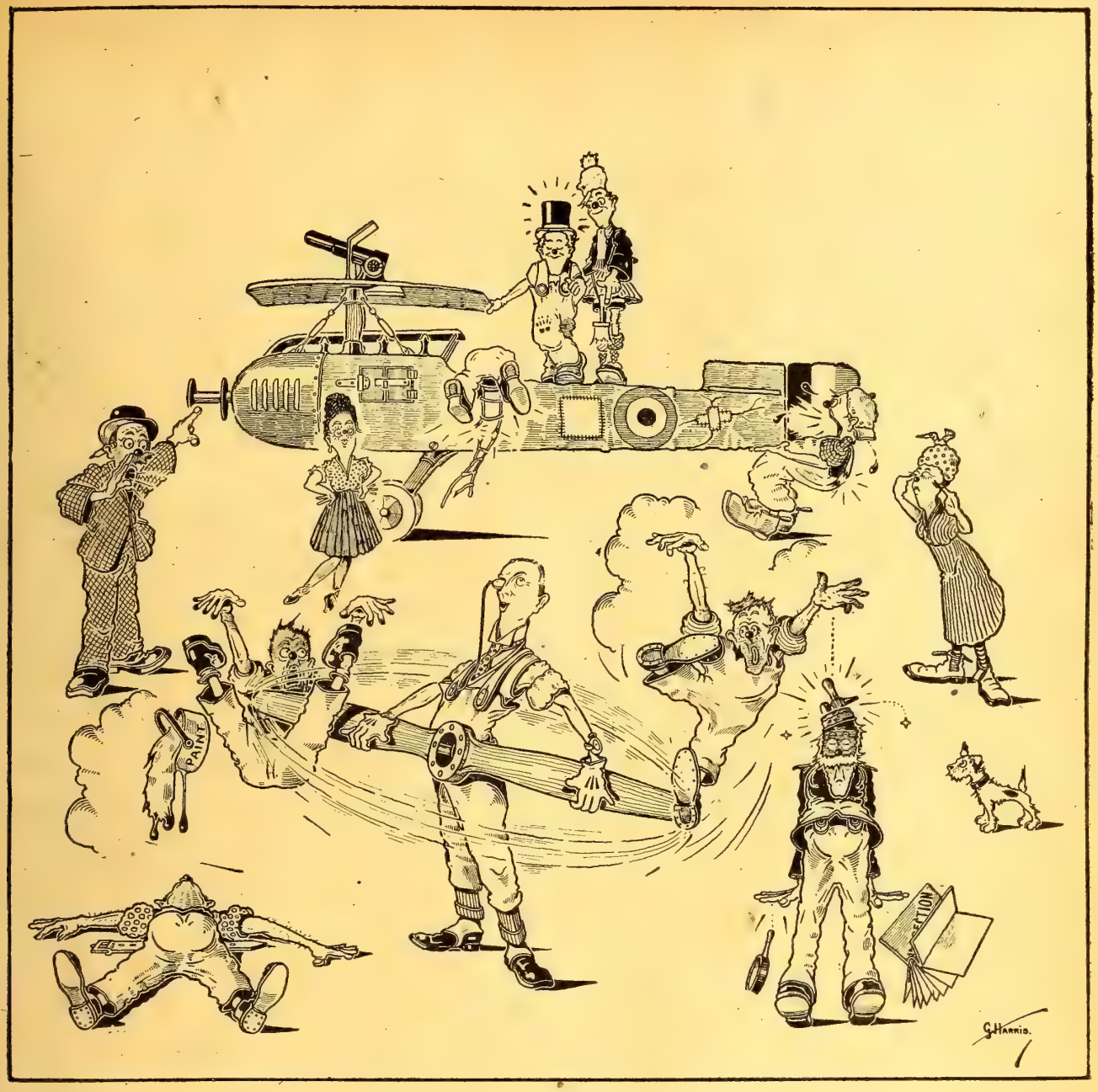
> Behind this 'plane are thousands of others already under way. They were produced by an American workshop, which during May and June last produced as many Liberty motors as Great Britain produced engines during the entire year 1915, at the close of which England had been 17 months at war. Including other types of aircraft engines more motors were produced in our shops in June alone than Great Britain produced during the whole year 1915, and this is not said in disparagement of Great Britain.

[One assures Mr. John D. that nothing which anyone could say could be a disparagement of British aero-engine output in 1915. One cannot disparage the almost non-existent. —Ed.].

> Facilities for the manufacture of aircraft engines and aeroplanes are now being developed with all speed. America has entered a production stage which means quantity production.

[One hopes that it also means quality production.—Ed.].

> Our country and its Allies will soon realise the benefit of such a fighting air force as will satisfy our people and our Allies, and bring consternation to our enemies.



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FROM THE "LONDON GAZETTE."

War Office, July 2nd.

REGULAR FORCES.—Establishments.—R.F.C.—Mil. Wing.—Equipt. Officers, 1st Cl.—Temp. Lt. (temp. Capt.) J. Durward, Gen. List, from the 2nd Cl., and to retain his temp. rank while so empld., Feb. 3rd.

2nd Cl.—From the 3rd Cl.—Lt. G. J. Williams, Spec. Res., Sec. Lt. W. G. Stafford, M.C., D.C.M., and to be temp. Lt. while so empld., Feb. 1st; Temp. Lt. B. Humphrey, Suff. R., and to be transfd to R.F.C., Gen. List, March 29th.

Supplementary to Regular Units or Corps.—R.F.C.—Mil. Wing.—Sec. Lts. to be Lts.:—R. T. Colley, Sept. 15th, 1917; H. W. Sidley, Nov. 27th, 1917; J. B. Ackroyd, Dec. 3rd, 1917; G. A. H. Pidcock, Dec. 17th, 1917; F. C. Smith, Jan. 8th; P. E. Jeffcock, Jan. 31st, H. Haycock, Feb. 1st; T. G. Mackenzie, Feb. 5th; S. B. Browning, Feb. 17th; R. T. Royse, D. B. Thorp, Feb. 21st; C. C. Gardner, Feb 24th; E. M. Leete, A. D. Robertson, Feb. 27th; R. Donald, C. B. Van Leenof, Feb. 28th; M. J. James, March 6th; T. Cooper, J. D. Campion, H. B. D. Grazebrook, March 7th; R. C. Steele, D.S.O., March 21st.

Air Ministry, July 2nd.

Bgde. Comdrs.—And to retain their temp. rank while so empld.:—Lt.-Col. (temp. Brig.-Gen. in Army) L. E. O. Charlton, C.M.G., D.S.O.; Lt.-Col. (temp. Brig.-Gen in Army) R. E. T. Hogg, C.I.E.; Lt.-Col. (temp. Brig.-Gen. in Army) C. L. N. Newall, Lt.-Col. (temp. Brig.-Gen. in Army) D. le G. Pitcher, C.M.G., April 1st; Lt.-Col. (temp. Brig.-Gen. in Army) T. I. Webb-Bowen, C.M.G., D.S.O., April 3rd; Col. (temp. Brig.-Gen., now temp. Maj.-Gen.) J. F. A. Higgins, D.S.O., April 1st to 28th

Brig.-Gens.—And to retain their temp. rank while so empld.:—Air.—Col. (temp. Brig.-Gen. in Army) P. W. Game, D.S.O. P.—Lt.-Col. (temp. Brig.-Gen. in Army) F. L. Festing, C.M.G. Q.—Lt.-Col. (temp. Brig.-Gen. in Army H. R. M. Brooke-Popham, D.S.O., April 1st.

Group Comdrs.—And to be temp. Cols. while so empld.:—Lt.-Col. D. G. Couner, May 18th, Lt.-Col. H. A. Williamson, June 27th.

Staff Officers, 1st Cl.—And to be temp. Lt.-Cols. if not already holding that rank:—Air.—Maj. (temp. Lt.-Col.) G. L. Crossman, C.M.G., D.S.O., Lt.-Col. H. D. Goldsmith, D.S.O., Maj. (temp. Lt.-Col.) F. C. Shelmerdine. Q.—Maj. (temp. Lt.-Col.) H. Blackburn, M.C., Maj. (temp. Lt.-Col.) H. C. H. Hudson, M.V.O., April 1st. S.—A. J. Clark (Bt. Maj., Lond. R., T.F.), and is granted a temp. commn. as Maj., April 4th; Maj. R. J. F. Barton, May 27th. T.—Maj. (temp. Lt.-Col.) M. Spicer, April 1st.

Staff Officers, 2nd Cl.—And to be temp. Majs., if not already holding that rank:—Air.—Maj. R. J. F. Barton. Capt. H. W. M. Paul, April 1st; Capt. (temp. Maj.) Rt. Hon. Sir J. A. Simon, vice Maj. R. J. F. Barton, May 27th; P.—Capt. R. S. Lindsell, Lt. (temp. Capt.) A. H. Stradling, Capt. A. J. W. Barmby, May 3rd, 1915; Capt. F. G. Stammers, June 15th; G. W. Dobson, July 3rd; W. G. P. Young, Capt. (temp. Maj.), Shrops. Yeo., T.F., and is granted a temp. commn. as Capt., April 1st; Capt. A. S. Ellerton, April 25th. S.—Maj. H. A. R. Aubrey, M.C., Lt. (temp. Capt.) R. Addenbrooke-Prout, M.C., Capt. C. C. Boyd-Rochfort, Capt. A. J. Child, M.C., Lt. (temp. Capt.) T. M. Eggar, Capt. E. C. Fulton, Capt. C. F. Gordon, M.C., Lt. (temp. Capt.) F. S. Isaac, Capt. G. C. May, Capt. J. Selwyn, vice Capt. G. C. May, April 19th; Capt. C. G. Beatson, vice Capt. A. J. Child, M.C., May 3rd; Capt. J. G. Howell, M.C., vice Lt. (temp. Capt.) F. S. Isaac, May 20th. T.—Lt. (temp. Capt.) R. H. Peto, April 15th; Capt. (temp. Maj.) C. E. Gardner. May 13th; Lt. (temp. Capt.) T. G. Baxenden, May 17th; Capt. L. J. Killmayer, May 22nd; Lt. (temp. Capt.) H. F. Anns, June 12th; Lt. (temp. Capt.) H. A. Tweedie, June 13th.

Staff Officers, 3rd Cl.—And to be temp. Capts., if not already holding that rank:—Air.—Lt. (temp. Capt.) L. A. K. Butt, Capt. C. B. Krabbe. P.—Lt. (temp. Capt.) E. J. Briscoe, Sec. Lt. (Hon. Capt.) S. Smith, April 1st; Lt. (temp. Capt.) A. E. Hartley, April 2nd; Capt. E. A. Beulah, Lt. H. S. Blakeley, May 1st; Lt. A. D. Finney, May 8th. S.—Capt. C. G. Beatson, W. S. Evans (Capt. Welsh R.), and is granted a temp. commn. as Capt., Capt. W. J. J. E. M. Everard, Lt. (temp. Capt.) S. D. Felkin, Capt. J. G. Howell, M.C., Lt. (temp. Capt.) P. C. Hoyland, Capt. J. Selwyn, Lt. (temp. Capt.) F. G. Stammers, G. T. Tait (temp. Capt. in Army), and is granted a temp. commn. as Capt., Lt. J. S. Webb, Capt. R. Whittaker, Hon. M. H. R. Knatchbell-Hugessen, M.C. (Lt. R.A.), and is granted a temp. commn. as Lt., April 20th; Lt. (temp. Capt.) H. O. Barnaby, vice Capt. C. G. Beatson, May 3rd; Capt. F. D. Lord Doune, M.C., May 21st; P.—Lt. J. J. Bartlett, April 1st; Sec. Lt. R. Hely, May 8th; Sec. Lt. (temp. Lt.) H. B. Langton, May 16th.

Camp. Comdt.—Graded for purposes of pay as S.O.3:—H. Hibbard (Lt., Res., Household Bn.), and is granted a temp. commn. as Lt., and to be temp. Capt. whilst so empld., vice Lt. (temp. Capt.) F. W. Angus, April 25th.

Flying Branch.—Maj. (temp. Lt.-Col.) R. R. Smith-Barry to be temp. Col. whilst specially empld., June 19th

Capt. (temp. Maj.) C. F. Portal, D.S.O., M.C., to be temp. Lt.-Col. whilst empld. as Lt.-Col. (A. and S.), June 17th.

The following Lts. (temp. Capts.) to be temp. Majs. whilst empld. as Majs. (A. and S.):—E. Cadbury, D.S.C., April 1st; A. C. Jowett, June 17th.

Lts. to be temp. Capts., whilst empld. as Capts. (A. and S.):—F. G. Pinder, June 1st; D. R. Brook, F. Carr, June 16th; R. J. B. Benson, F. McChesney, June 17th; H. J. Pratt, June 22nd; W. G. Holbrow, June 25th.

Lts. (Hon. Capts.) to be temp. Capts. whilst empld. as Capts. (A. and S.):—C. L. Bailey, H. S. Broad, J. H. Keens, E. E. Maitland-Herriet, P. H. Martin, F. S. Mills, E. M. Morgan, R. S. de Quincey, K.F. Saunders, N. M. Scott, H. L. E. Tyndale-Biscoe, A. A. Wallis, May 1st; L. C. Shoppee, D.S.C., May 9th; G. H. T. Barnes, C. J. Clayton, R. Davies, E. E. Deans, C. Perrett, G. M. T. Rouse, A. R. Stack, A. M. Tidy, June 1st; Capt. (temp. Maj.) D. R. Gawler, M.C., relinquishes the temp. rank, and reverts to the rank of Capt. whilst empld. as Capt. (A. and S.), May 6th; Lt. (temp. Capt.) H. W. Eades to be Lt. (O.), from Tech., May 25th.

The follg. Lts., from Obsr. Officers, to be Lts. (A. and S.):—G. E. Randall, May 29th; A. Swales, May 23rd; C. H. Wallis, May 25th; Sec. Lt. W. Z. Grandi, from Tech., to be Sec. Lt. (A. and S.), May 30th.

The follg. Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A. and S.):—J. D. Smith, April 7th, R. T. Nixon, April 9th; M. Geuest, April 15th; A. B. D. Campbell, May 5th, M. J. Levine, May 7th; C. H. P. Killick, May 10th; W. F. M. Wise, May 15th; J. D. Henshaw, May 17th; O. H. P. Lloyd, M. A. Vachon, May 18th, J. E. G. Rochemont, A. W. Southall, A. S. Bradburn, J. H. Ratcliffe, R. Lazzari, H. F. Allbutt, F. C. Bennett, W. W. McDavid, E. S. B. Clarke, May 20th; S. N. Waddy, S. L. G. Beaufoy, F. B. Miscroy, L. Arnott, May 21st; K. G. Ibbotson, S. L. Walters, May 22nd; S. Richardson, H. H. Botting, May 23rd; M. A. K. Carpenter, May 24th; A. S. Maltby, J. Satterthwaite, E. C. Gordon, May 25th; N. W. Churchill, R. W. Payne, May 26th; J. B. Smith, C. H. Hobson, May 27th; J. Cooke, M. A. Toomey, G. McG. Chalmers, J. P. Bernigand, May 28th; H. Alcock, May 29th; R. Beesley, H. T. Perkins, H. G. Packford, J. M. Meston, H. H. Parker, A. J. Girardot, C. F. D. Evans, May 30th; M. R. Jacobs, C. S. Leslie, J. S. Hugesson, J. B. Macdonald, G. Herring, A. D. Kennedy, A. E. Thorp, A. D. Greenhough, W. H. Dillon, May 31st, A. J. P. Evans, F. G. Conison, H. A. Edwards, H. J. Fox, R. G. Adams, J. H. H. Doughty-Davies, June 1st; L. D. Russell, H. Parker, R. A. P. Johnson, F. C. Taylor (date of 1st commn., Aug. 23rd, 1917), S. P. Seddon, S. T. C. Roberts, F. W. Sinclair, C. D. Thornton, A. R. Pengilly, J. Ure, F. J. S. Clayden, J. R. Gaze, G. S. Bragg, June 2nd, G. W. C. Ravenhill, J. N. Payne, C. W. Willis, June 3rd; B. G. Pool, W. A. N. Butler, A. R. Collis, W. F. McManus, H. N. Hastie, C. V. Felhauer, K. G. Nairn, June 4th; W. T. Jones, H. J. Gye, T. D. Drury, P. J. O'Donnell, June 5th; J. C. Collins, June 7th; L. G. Tearle, G. E. T. Payne, June 8th; H. S. McDowall, June 11th.

The follg. are granted temp. commns. as Sec. Lts. (A. and S.):—J. Spooner (temp. Lt., attd. R. War. R.), May 28th; H. R. Hayden (temp. Sec. Lt., attd. Welsh R.), May 29th, B. R. Collison (Capt., L'pool R.), and to be Hon. Capt., G. H. Hunt (Lt., Sask. R., C.E.F.), and to be Hon. Lt., E. H. D. Fowler (Sec. Lt., Middx. R.), May 31st; J. R. Traves (temp. Sec. Lt., attd. York and Lanc. R.), C. A. Brown (Lt., Quebec R., C.E.F.), and to be Hon. Lt., S. E. Sutcliffe (temp. Lt., Northd. Fus.), and to be Hon. Lt., June 1st; C. P. Tindal-Atkinson (temp. Capt., N. Lan. R.), and to be Hon. Capt., A. H. Bill (Lt. Sask. R., C.E.F.), and to be Hon. Lt., June 4th; W. M. Herriot (Sec. Lt., L'pool R.), June 5th; H. B. Hatcher (temp. Sec. Lt., Middx. R.), O. H. Hadley (temp. Capt., N. Lan. R.), and to be Hon. Capt., June 7th.

The follg. Cadets are granted temp. commns. as Sec. Lts. (A. and S.):—H. L. Allward, H. P. Ayres, A. S. Ball, W. G. Boyd, W. Y. Bogle, P. S. Brown, C. H. Browne, H. Burdick, D. L. Butchart, J. M. Byrne, J. G. Callaghan, W. L'E. Carroll, H. Cheetham, F. D. Cowan, M. H. F. de Haerne, G. W. Dyson, H. H. Dobson, H. V. Feather, A. A. Forhan, H. A. Freeman, G. F. Freer, C. W. Gracey, A. Graham, H. C. Graham, P. A. Hainstock, F. McL. Harrison, A. S. Helmer, H. Higgins, W. W. Ingram, E. J. Jones, R. A. Jones, W. N. Keeling, C. W. Kerr, J. A. Y. Laforest, R. G. La Motte, C. G. Lang, F. F. Leet, F. C. Logan, R. D. Lovesay, A. J. Marshall, W. C. Marshall, A. S. Mathews, F. C. McAdams, R. S. McConnell, R. C. McHenry, A. E. McKenna, R. H. Mills, W. E. Mosher, E. C. O'Donnell, D. S. Osborne, C. R. Parkinson, O. B. Santa Maria, C. D. Smith, C. H. Tripp, A. M. Webb, F. W. Wells, W. H. Wilde, M. I. Williams, H. B. Wilson, D. Withycomb, H. C. Wood, W. C. Taylor, May 23rd; A. J. Adamson, C. W. C. Barber, A. F. Beyles, C. E. Binet, H. C. Bourke, E. H. Brown, J. B. Browning, R. R. Caldwell, H. E. Chaffey, H. J. Clark, C. C. Creigton, G. R. Davidson, M. R. de Miege, L. W. De Serres, J. W. Grooms, E. P. Hall, L. P. Harlow, R. H. Harlow, W. K. Hogg, W. B. Lake, A. C. Langtry, R. A. Macdonald, G. A. Moir, F. R. Orris, F. L. Pogue, W. B. Ramsay, R. W. Roberts, L. S. Ros, G. D. Scovil, H. G. Shaw, T. D. Shaw, H. B. Singleton, G. P. Styles, J. T. Taylor, R. Williams, May 30th; J. W. Bellah, G. H. Cote, I. L. Cullen, M. L. Hall, H. C. Ingram, C. D. Gile, May 31st.

The follg. Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts., Obsr. Officers:—E. C. Bethell, May 25th; I. B. Corey, P. Pilkington, P. S. Hartley, J. H. Gray, June 1st; P. F. Hilborn, June 6th; T. F. L. Myring, June 8th; R. Walker, June 10th; E. G. Brigg, R. M. Doyle, J. Glover, F. D. Marshall, G. N. Troth, R. F. Jarrom, June 11th; C. H. A. Collyns, J. M. Evans, June 12th; J. B. Russell, June 13th; F. Shaw, June 14th; C. C. Dance, W. R. Henderson, W. S. Marshall, A. E. Durling, C. C. Walmsley, E. A. Dew, June 16th; G. McM. Findlay, A. Hogg, June 17th; J. B. Cockin, T. Garlick, H. S. Hind, June 17th.

The follg. are granted temp. commns. as Sec. Lts., Obsr. Officers:—T. Newey (temp. Sec. Lt., Leic. R.), May 17th; C. Beagle (temp. Sec. Lt., Manch. R.), May 26th; G. R. Schooling (temp. Sec. Lt., Northd. Fus.), W. H. E. Labatt (temp. Sec. Lt., W. York R.), H. B. Steckley (Sec. Lt., Lond. R., T.F.), D. J. Muil (Sec. Lt., R. War. R., T.F.), K. Nixon (Sec. Lt., W. Rid. R., T.F.), J. Whitehead (temp. Sec. Lt., W. York. R.), A. Urinowski (temp. Sec. Lt., Lpool. R.), E. Vickers (Sec. Lt., W. Rid. R., T.F.), W. D. Clark (temp. Sec. Lt., Durh. L.I.), S. W. P. Foster-Sutton (Sec. Lt., E. Kent R.), June 1st; R. W. Ellis (temp. Sec. Lt., Northd. Fus.), June 2nd; J. Arnold (Sec. Lt., Lpool. R., T.F.), F. P. Cobden (temp. Lt., M.G.C.) and to be Hon. Lt., G. Davies (Sec. Lt., N. Lan. R., Spec. Res.), M. R. H. Kane (Lt., R. Dub. Fus., Spec. Res.), and to be Hon. Lt., D. E. F. Waight (Lt., Northd. Fus.), and to be Hon. Lt., June 8th; A. T. le F. Johnson (Lt., Lord Strathcona's Horse, C.E.F.), and to be Hon. Lt., June 9th; R. W. Griffiths (temp. Lt., Leic. R.), and to be Hon. Lt., C. G. Johnson (Lt.,



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Can. Rly. Service, C.E.F.), and to be Hon. Lt, A. W. Whitmore (temp. Sec. Lt., Leic. R.), N. Riddell (Lt., Hamps. Yeo, T.F.), and to be Hon. Lt., A. C. Dutton (Sec. Lt., R W. Kent R., T.F.), J. L. McPherson (Sec. Lt., High. L.I., T.F., June 11th; A. C. Estcourt, M.C. (temp. Sec. Lt., Gen. List, New Armies), June 12th; P Wilkins, M.C. (temp. Sec. Lt., R.E.), O. Sherwood (Sec. Lt., Durh. L.I., T.F.), June 13th; A. M. Pearson (Sec Lt, Som. L.I.), T. H R. Riggs (Sec. Lt., Linc. R.), G. Archer (temp. Sec. Lt., Suff. R.), T. Wiggins (temp Sec. Lt., Lan. Fus.), A. L. Benjamin (temp. Lt., R Fus), and to be Hon. Lt., W. B. Walker (Sec. Lt., High. L.I., Spec Res.), R. F. Connell (temp. Sec. Lt., K.R.R.C.), H. S. Notley (temp Lt., K.R.R C.), and to be Hon. Lt., June 14th; E. A. Wadsworth (temp. Sec. Lt., E. York. R.), C. E. Eddy (temp. Sec. Lt., S A. Inf.), June 16th; W. H. Thompson (temp. Sec. Lt., attd. Northd. Fus.), L. H. Bell (temp. Sec. Lt., attd. Glouc. R.), E. Kew (temp. Sec. Lt., Northn. R.), R. D. Linford (temp. Sec. Lt., attd. R. War. R.), H. Mercer (Sec. Lt., E. Lan. R., T.F.), June 17th; Lt. C. F. J. North, from A. and S., to be Lt., Obsr., June 11th.

The follg. Cadets are granted temp. commns. as Sec. Lts., Obsr. Officers :—R. F. Cathrow, R. O. Baird, June 26th; R. C. Gibbs, N. H. Wildig, J. F. Pollock, June 28th; A. Birch, A. F. Cairns, W. Hutchings, S. Hammersley, G. F. Custance, M. R. Prodger, A. O. Moore, R. N. Palmer, W. A. Evans, C. Harrison, K. G. M. Galletly, June 29th.

Lt. T. A. Armstrong resigns his commn., July 3rd.

Lt. B. Yandell resigns his commn., and is granted the hon. rank of Lt., July 3rd.

The follg. Lts. relinquish their commns. on account of ill-health caused by wounds, and are granted the hon. rank of Lt. :—W. H. Maturin, C. R. O'Hagan, July 3rd.

Administrative Branch.

Lt.-Col. J Attenborough, C.M.G., D.S.O, to be temp. Col. while empld. as Col, April 1st.

Maj. H. B. Bonning to be temp. Lt.-Col. while empld. as Lt.-Col., April 17th.

Lts. (temp. Capts.) to be temp Majs. while empld as Majs. :—E. G. A. Lefrere, June 19th; A. Young, June 24th.

Capt. (temp. Maj.) G. H. Cox to be Maj. (from A. and S.), June 10th.

Lts. to be temp. Capts. while empld. as Capts. :—C. F. Powell, June 14th; F. Jewell, June 21st.

Sec. Lts. to be temp. Lts. while empld. as Lts :—(Hon. Lt.) J. W. Harling, June 19th, W. L. Rees, June 24th

Lts. (A. and S.) to be Lts. :—L. G. Bacon, April 8th; N. E. S Simon, June 4th; A. Glynne, June 15th; A. D. Carey, June 18th; E. W. Berry, H. G. Cox, June 20th; C. H. Clifford, E. W. Hadrill, June 24th.

Lts. (O.) to be Lts. :—H. P. L. Gardner, June 17th; S. G. Barlow, C. W. Wilson, June 24th.

The follg. are granted temp. commns as Sec. Lts. :—W. W. W. Reilly (Capt., Conn. Rang.), and to be Hon. Capt.; E. D. Edwards (Lt., Lan. Fus., Spec. Res.), and to be Hon. Lt.; R. S. Cowen (temp. Lt., attd. K.R.R.C.), and to be Hon. Lt., June 7th; H. W. Croft, H. A. Lambert, A. O. M. Limb, E. A. Woods, July 1st.

The surname of Sec. Lt. J. R. Deronet is as now described, and not as stated in "Gazette," June 21st

The follg. Lts. relinquish their commns. on account of ill-health contracted on active service, and are granted the hon. rank of Lt. :—H. B. O'Hagan, D. G. O'Reilly, June 3rd

The follg. Sec. Lts. resign their commns., and are granted the hon. rank of Sec. Lt. :—G. J. Bowden, J. I. Rikh, July 3rd.

Sec. Lt. R. Lyon relinquishes his commn. and is granted the hon. rank of Sec. Lt., July 3rd.

Sec. Lt. F. George relinquishes his commn. on account of ill-health caused by wounds and is granted the hon. rank of Sec. Lt., July 3rd.

Sec. Lt. E. G. Morris relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., July 3rd.

Sec. Lt. T. H. Somerville relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., July 3rd.

Technical Branch.

To be temp. Majs. while empld. as Majs. :—Capt. G. W. Williamson, M.C., May 6th; Lt. (temp. Capt.) J. N. D. Heenan, June 19th; Lt. (temp. Capt.) C. H. Nathan, June 21st, Capt. C. H. Awcock, June 25th; Capt. (temp. Maj.) G. de L. Wooldridge to be Maj. (from Admin.), April 1st.

To be temp. Capts. while empld. as Capts. :—Lt. D. Clark, Lt. K. D. G. Collier, April 1st; Sec. Lt. (Hon. Maj.) H P. Coles, May 26th; Lt. (Hon. Capt.) F. W. Bedford, June 24th.

Sec. Lts. to be temp Lts. while empld. as Lts :—W. E. Townsend, April 2nd; (Hon. Lt.) N. W. Wale, May 9th; R. W. Anderson, June 29th.

Lts. (A. and S.) to be Lts. :—(Hon. Capt.) A. M. Hughes, June 19th; L. C Pincott, June 24th; D. R. Snider, June 28th

Lt. N. W. Rostron to be Lt. from (Admin.), June 17th)

Sec. Lts. to be Lts. :—C. Atkey, R. G. Fussell, R. B. Hutchings, W. R. Kells, G. A. Lush, Sir C. C. Mansel, Bt, L. O. Millington, S. H. Roberts, H. R. South, F. B. Stradling, F. A. Thomas, April 2nd; S. M Barrett, B. Rotherham, J. G. Speirs, May 4th; J. W. Clark, May 10th; A. H. Johnson, May 11th; U. P Jonckheers, R. D. Owen, June 7th.

Medical Branch.

Lt. F. R. McCambley to be Capt., June 13th.

The follg are granted temp. commns. as Lts. :—(Substituted for notification in "Gazette," June 11th).—L. C. W. Balls, R A. Spong, H. L. Thorn, June 6th.

Lt. G. O. Roper to be Lt. from (K.B.), June 22nd.

Memoranda.

Sec. Lts. to be Lts. :—J. A. Galbraith, April 13th; A. C. Clinton, April 26th; F. D. Coleman, May 17th.

The follg. Lts. relinquish their commns. on ceasing to be empld. :—(Hon. Maj.) P C. Franklin (Maj., A.S.C., T.F), June 16th; (Temp. Capt.) H. H. Hanchett-Glover (Lt., R.N.V.R.), June 29th.

* * *

THE KING HAS BEEN PLEASED TO CONFER THE FOLLOWING REWARDS FOR GALLANTRY AND DISTINGUISHED SERVICE :—

The Distinguished Flying Cross.

Lt. (Hon. Capt.) E. J. P. Burling, Lt. (temp. Capt.) H. E. Fletcher, Lt. (Hon. Capt.) E. M King, Lt. (Hon. Capt.) H. de V. Leigh, Lt. (Hon. Capt.) V. Millard, Sec. Lt. E. Robinson, Lt. E. A. B. Wimbush.

The Air Force Cross.

Lt. C. K. C. Dagg, Lt. A. V. McKisver, Lt. M. C. Mossop

The Meritorious Service Medal.

For Services rendered in a Theatre of War.—F/142 P.O. (R.H.) J. W. Baglee (Drayton Park, N.), Z/116 Serjt. A. E. Swain (Banbury).

For meritorious service and devotion to duty on the occasion of an outbreak of fire in a Government establishment.—No. 9546 Cpl. M. J. Horne, Aust. F.C.; No. 92534 1st A.M. W. H. Howard (Tavistock); No. 812 1st A.M. E. L. Spike, Aust. F.C.

Mentioned in Dispatches.

The following officers and other ranks of the Royal Air Force have been mentioned in dispatches and reports for distinguished services :—Lt. C. E. Hughes, Lt. (Hon. Capt.) W. R. Kempson, Lt. (Hon. Capt.) A. E. Popham, Lt. T. G. M. Stephens.

F/993 C.P.O. (2.S) H. J. Bagge, 6434 Actg. A.M. (1.E) J. R. Bell, F/358 W.O. (2nd Grade) A. J. Cambridge, F/7165 Actg. A.M. (1.E) G. W. Chardin, F/428 P.O. (M.E.) F. H. Cross, M/3500 P.O. (R.H.) D. W. Hamilton, F/4603 P.O. (W/T) J. W. McPherson, M/2354 W.O. (2nd Gr.) J. Noonan, D.S.M., F/7643 P.O. (M.E.) L. H. Phillips, F/1502 P.O. (M.E.) W. A. Prince, Ldg. Mech. W. Robertson (late R.N.A.S), F/19709 C.P.O. (3 P.H.) R. Wilkinson, W.O. 2nd Gr. (S.H.) A. T. E. Witt.

The Distinguished Flying Cross.

The King has been pleased to confer the Distinguished Flying Cross on the following officers of the Royal Air Force, in recognition of acts of gallantry and distinguished service :—

Lt. (temp Capt.) R. Affleck, Lt. L. A. Ashfield, Lt. (temp. Capt.) E. D. Atkinson, Lt. G. G. Bailey, Capt. T. A. Batchelor, Lt. (temp. Capt.) A. W. Beauchamp-Proctor, M.C., Capt. (temp. Maj.) W. A. Bishop, V.C., D.S.O., M.C, Lt. H. Briggs, Lt (temp. Capt.) A. R. Churchman, Lt. (temp. Capt.) P. J. Clayson, M.C., Lt. (temp. Capt.) A. H. Cobby (Aust. F.C.), Lt. (temp. Capt.) C. H. Darley, D.S.C., Lt. H. B. Davies, Lt. H. Fall, Lt. (temp. Capt.) M. H. Findlay, D.S.C. Lt. (temp. Capt.) J. H. Forman, Capt H. G. Forrest (Aust. F.C.), Capt. D. Gilley, Lt. J. M. Glaisher.

Lt. W. F. J. Harvey, Lt. G. A. King, Lt. (Hon. Capt.) S. M. Kinkead, D.S.C., Lt. W. H. Leete, Lt. R. L. Manuel (Aust. F.C.), Lt. (temp. Capt.) I. D. R. McDonald, Lt. C. McEwen, M.C., Lt. A. McGregor, Lt. (temp. Capt.) T. P. Middleton, Sec. Lt. (Hon. Lt.) A. Mills, Lt. (temp Capt.) J. Mitchell, M.C., Lt. (temp. Capt.) S. N. Pike, Lt. (Hon. Capt.) W. O. Redgate, Capt. R. H. Rusby, Lt. L. R. Shoebottom, Lt. (temp. Capt.) G. E. Siedle, Lt. (temp. Capt.) T. L. Simpson (Aust. F.C.), Lt. (temp. Capt.) J. A. Slater, M.C, Lt. (temp. Capt.) A. H. Whistler, Lt. H. N Young, Capt. W. E. Young.

War Office, July 4th.

REGULAR FORCES.—Establishments.—R.F.C.—Mil. Wing.—Flying Officers.—Temp. Sec Lts. (on prob.) Gen. List, and to be confirmed in their rank :—J. M. Vennell, Dec. 12th, 1917; D. G. Reid, Dec. 24th, 1917; W. G. Carmichael, Feb. 1st; W. A. Anderson, Feb. 20th; G. W. Welch, March 12th; N. V. Clarke, March 18th; R. R. Brown, March 20th; R. G. Martin, March 25th; J. Reid, F. W. Plaxton, March 28th; J. F. Slavik, March 30th.

Gen. List.—Temp. Sec. Lt. L. M. Hughes to be temp. Lt. (March, 26th; 3rd Cl. Air Mech. T. Usher to be temp. Sec. Lt., Dec. 28th, 1917; T. E. Snelgrove to be temp. Sec. Lt. (on prob.), March 22nd.

War Office, July 5th.

REGULAR FORCES.—Establishments.—R.F.C.—Mil. Wing.—Gen. List.—Cpl. W. J. Lee-Bird, from R.E., T.F., to be temp. Sec. Lt., March 16th, 1916; Cadet L. P. J. Dion, from Canadian R., to be temp. Sec. Lt. (on prob.), March 21st.

* * *

With reference to the awards conferred as announced in the "London Gazette," dated Feb. 4th, 1918, the following are the statements of service for which the decorations were conferred :—

The Distinguished Service Order.

Sec. Lt. (temp. Capt.) J. B. McCudden, M.C., M.M. Gen. List and R.F.C.

He attacked and brought down an enemy two-seater machine inside our lines, both the occupants being taken prisoner. On another occasion he encountered an enemy two-seater machine at 2,000 ft. He continued the fight down to a height of 100 ft. in very bad weather conditions, and destroyed the enemy machine. He came down to within a few feet of the ground on the enemy's side of the lines, and finally crossed the lines at a very low altitude. He has recently destroyed seven enemy machines, two of which fell within our lines, and has set a splendid example of pluck and determination to his squadron.

[Captain McCudden has since been awarded a bar to the D.S.O., and the Victoria Cross.—Ed.]

Sec. Lt. (temp. Capt.) A. E. McKeever, M.C., R.F.C., Spec. Res.

While on patrol by himself over the enemy's lines in very bad weather he encountered two enemy two-seater machines and seven scouts. By skilful manœuvring he engaged one and destroyed it. As he turned to get back to the lines five of the enemy dived on his tail, and his observer engaged and destroyed two of them. After an indecisive combat with two others he attacked and destroyed one of the enemy which had overshot him. He continued the fight with the remainder until he was within 20 ft. of the ground, when the enemy machines climbed and left him. He has recently destroyed ten enemy machines, and has shown great courage and initiative.

A Second Bar to the Military Cross

Sec. Lt. (temp. Capt.) A. C. Youdale, M.C., R.F.C., Spec. Res.

On contact patrol, when he was sent up to locate the positions gained by our troops, his first attempt was frustrated by a snowstorm. He made a second attempt, and, flying at a height of 200 ft., in spite of severe hostile fire, succeeded in locating all our positions.

A Bar to the Military Cross.

Lt. (temp. Capt.) C. T. Lally, M.C., R.F.C., Spec. Res.

Flying through and above the clouds, he released his bombs over his objective, well behind the enemy lines, at a height of 500 ft., under heavy fire. On two later occasions he carried out photographic reconnaissances of hostile aerodromes under very bad weather conditions, on account of which several other machines had to give up the journey. He has shown himself to be a most determined and successful leader, his example of courage and skill being of great advantage to his squadron.

Capt. L. J. MacLean, M.C., R.E., R.F.C.

While leading a patrol he attacked and drove down an enemy two-seater machine and destroyed an enemy scout. He showed the greatest determination in leading patrols and splendid coolness and courage, most of his work being done under very difficult weather conditions.

The Military Cross.

Capt. J. C. L. Barnett, Ox. and Bucks L.I. and R.F.C.

When information was urgently needed he volunteered to go out on patrol in a gale of wind and most difficult conditions. The patrol was successful, and valuable information was obtained. On another occasion he made a reconnaissance in a thick fog, flying often at a height of 40 ft., and was heavily fired on from the ground. He showed the greatest courage and determination.

Sec. Lt. (temp. Capt.) C. E. Barrington, R.F.A. and R.F.C.

He attacked enemy transport with bombs from a height of 50 ft., two of his bombs exploding on the rear of the column. He led his formation successfully on many occasions in very bad weather conditions, and obtained valuable information.

(*Continued on page 156.*)

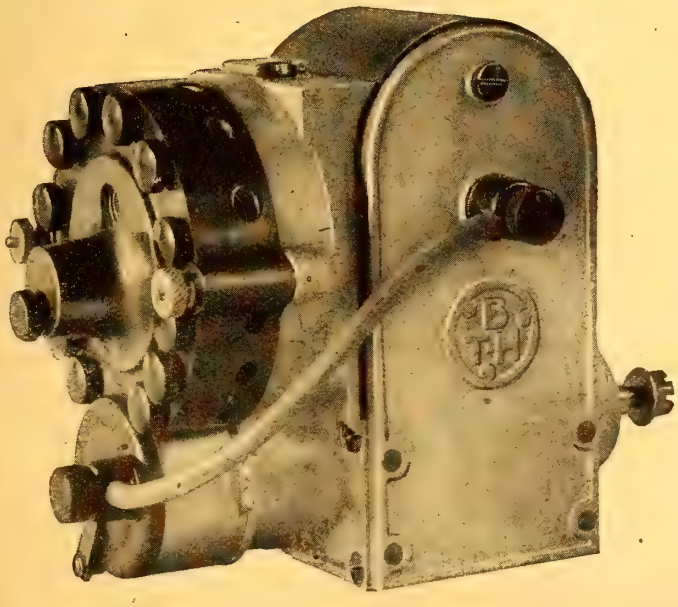
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with the result that they are to-day the equal of any magneto in the world, and their absolute reliability has been proved in service under the most difficult conditions.

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THE ROLAND SINGLE-SEATER FIGHTER.

"L'Aérophile" for May, 1918, gives the following particulars of the Roland Single-Seater Fighter. For this information and the accompanying drawings one is indebted to the editor of that excellent paper.

The single-seater Roland biplane D II., which first made its appearance in March, 1917, is once more frequently encountered by French pilots, chiefly in the Eastern sectors.

The dimensions of the machine are as follows:—

Span, upper plane	8.90 m.
,, lower ,, ...	8.50 m.
Total length	6.95 m.
Height	2.95 m.

Its weight, 827 kgms., is slightly greater than that of the Albatros D III. The lifting surface being 23 sq. m., the load carried per square metre of surface being 36 kgs. (about 7.3 lbs. per square foot).

The Fuselage.

The construction of the fuselage is worthy of special notice. It is built entirely of plywood, covered with fabric, monocoque fashion, and has an oval section finishing up with a vertical knife edge at the stern-post.

The construction is of the lightest, the framework consisting merely of extremely thin longerons extending the whole length of the fuselage.

Rigidity is due only to two plywood partitions uniting the middle of the top half with the middle of the bottom half. The total thickness of the six layers of the plywood is only 1½ millimetres. At the rear of the pilot's seat one can count only four thin layers.

Between the pilot's seat and the engine there is a superstructure to the fuselage which thins itself at the top to a fin .11 m. thick to which is attached the radiator and the upper plane.

The centre section of the upper plane is hollowed out to provide space for the radiator. This arrangement replaces the cabane.

One finds on the lower part of the fuselage two shoulders, one on either side, to which are fixed the lower planes.

At the rear the tail skid, built of timber and shod with metal, penetrates the fuselage through a kind of swelling, reminiscent of Nieuport practice.

The pilot is seated high up, his view being assured by two windscreens placed one on each side of the central ridge. The field of view ahead is very obstructed, and visibility is not so good as in other machines.

The Upper Planes.

The planes are trapezoidal in plan, unequal in span, without stagger or dihedral, but swept back 1½°. Their chord is uniformly 1.45 m., and their gap 1.34 m.

The ribs are perpendicular with the leading edge, and, as each strut of a pair is attached to a common rib and the wings are swept back, the struts are not exactly one behind the other.

The upper planes are formed on two spruce spars placed .83 m. apart, the front one being .13 m. from the leading edge.

There are twelve ribs which are placed .37 m. apart and are interspaced with laths 10 mm. wide, running from the leading edge to the rear spar.

The distance between the main spars is maintained by four compression members of steel tube. These tubes are 25 mm. diameter and are placed at equal intervals of 1.30 m.; and are cross-braced by piano-wire 3 mm. thick. Two fabric strips between the leading edge and the front spar, and two others between the front and rear spars alternately pass from one rib to another, over and under.

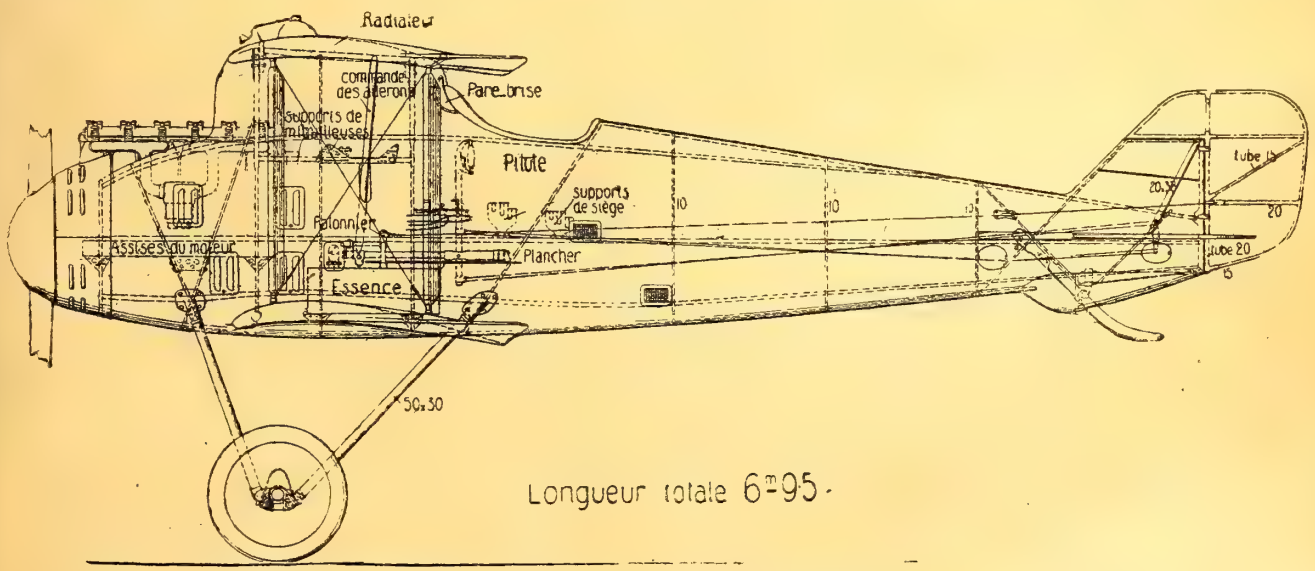
Certain angles in the wing frame are kept very rigid by plywood angle pieces.

The ailerons, which are fitted to the upper planes, do not project and are unbalanced. A strip of plywood placed over the fabric protects the aileron hinge at its attachment to the rear spar.

Along this line the aileron measures 1.82 m. It is .42 wide. Its axis is a 30 mm. tube. The aileron cranks are operated by two vertical tubes, Nieuport fashion.

In the upper left hand wing is found a gravity feed petrol tank.

The upper planes are attached directly to the highest part of



Side Elevation of the Roland Single-Seater.

the fuselage with the help of a special bolt which recalls the system of attachment described on the L.V.G. C.IV. type.

The Lower Planes.

The structure of the lower wings is like that of the upper wings. The spars are disposed in the same way and consequently maintain the same distance between one another. There are ten ribs to each wing, of which nine are .01 of a metre and the last .025 of a metre thick. Between each of them there is also a light lath 10 mm. thick. The bracing is the same as in the upper wings except that the struts, made of four steel tubes, are slightly different, the first being of 20 mm. and the three others of 25 mm. From the first to the second is 1.17 ms., from the second to the third 1.13 ms., and from the third to the fourth 1.11 ms.

The lower wings are fixed up against the rudimentary planes on each side of the base of the fuselage.

In rigging one notices an incidence of 4 degrees at the second rib, and 3 degrees at the seventh. The interplane struts are of tube of .025 ms. diameter, placed inside a streamline of wood which gives them a depth of .09 ms.

Tail.

The whole tail unit has the aspect of a trapezium with at the base a large triangular piece of small depth cut out.

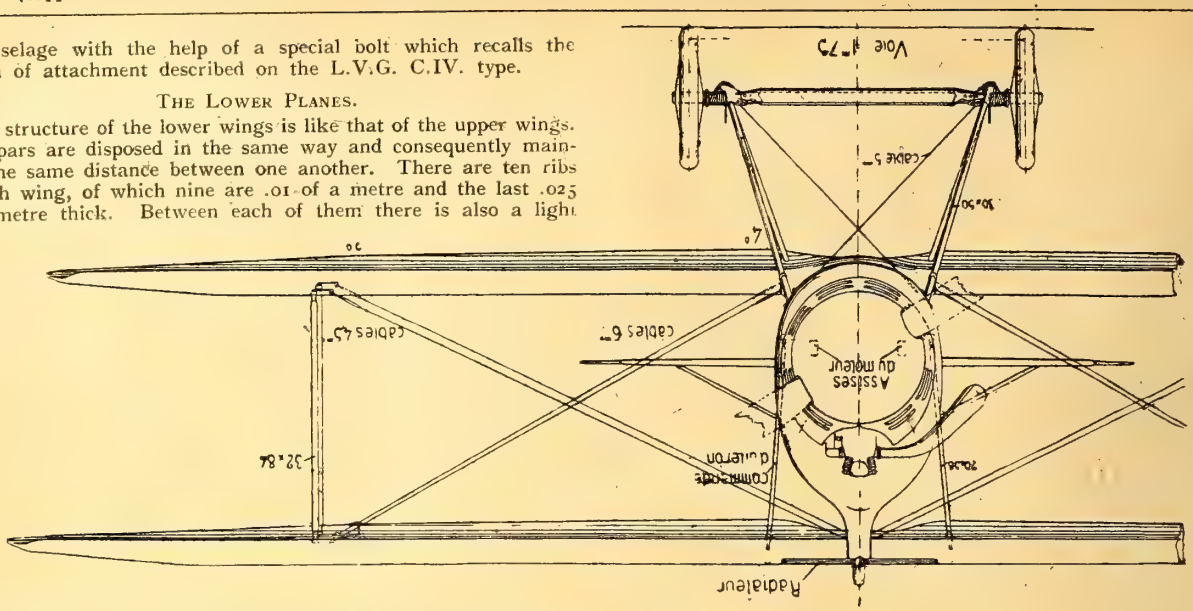
The fixed tail-plane is of wood and the two balanced members forming the elevator are entirely of metallic construction.

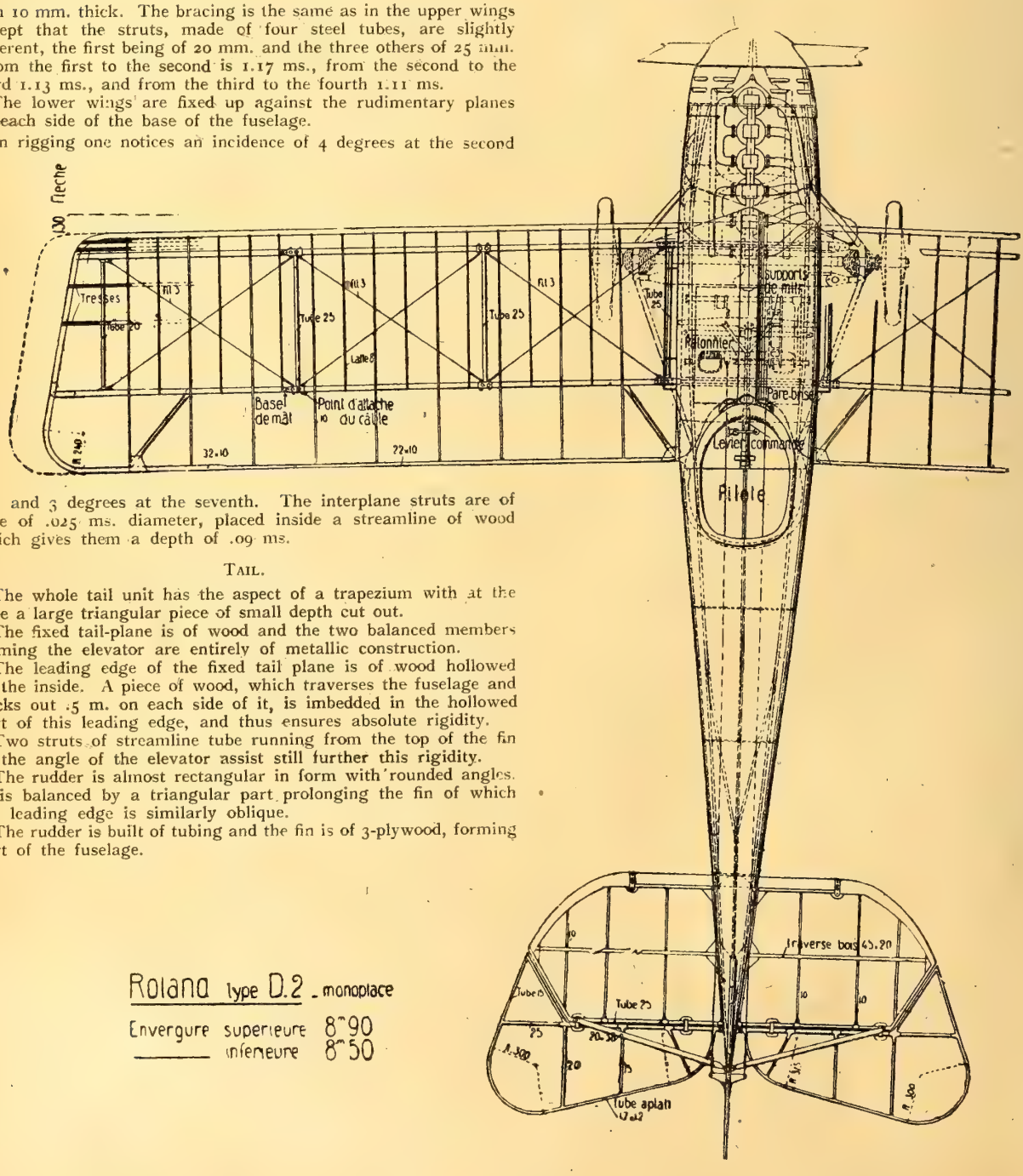
The leading edge of the fixed tail plane is of wood hollowed on the inside. A piece of wood, which traverses the fuselage and sticks out .5 m. on each side of it, is imbedded in the hollowed part of this leading edge, and thus ensures absolute rigidity.

Two struts of streamline tube running from the top of the fin to the angle of the elevator assist still further this rigidity.

The rudder is almost rectangular in form with rounded angles. It is balanced by a triangular part prolonging the fin of which the leading edge is similarly oblique.

The rudder is built of tubing and the fin is of 3-plywood, forming part of the fuselage.





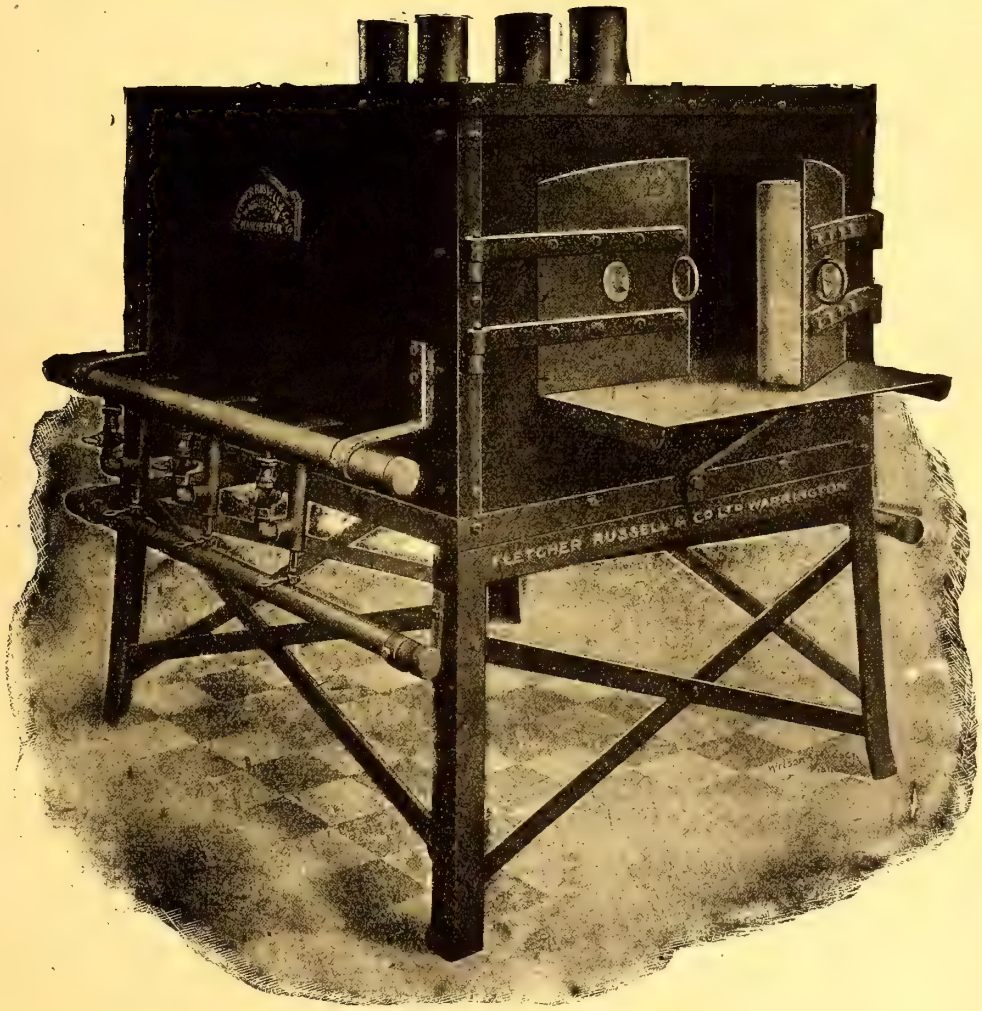
Rolano type D.2 - monoplace

Envergure supérieure 8^m90
——— inférieure 8^m50

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WARRINGTON.

The control cables of the elevator are concealed inside the fuselage and the control cables of the rudder only come out of the fuselage about 1 metre from the end.

MOTOR.

The single-seater Roland D.II. is fitted with a Mercédès engine of 160 h.p. of a type already described. As well as the supplementary tank placed in the upper left plane it has a tank 70 by 70 by 25 placed under the rudder bar.

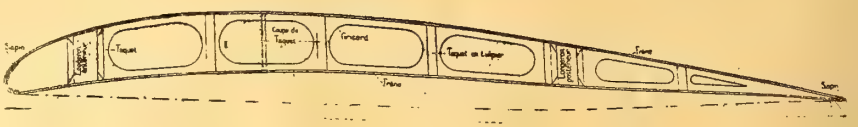
ARMAMENT.

There are two Spandau machine-guns operated by the motor. They are placed one on each side of the engine inside the fuselage from which they only protrude at the front.

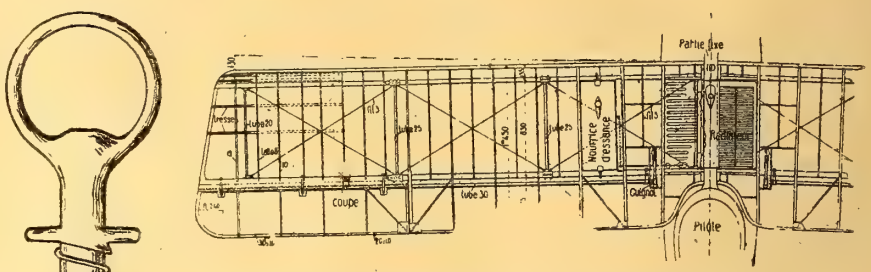
UNDERCARRIAGE.

This is formed of two tubular V's held together by two cross cables. Their point of attachment corresponds exactly to the base of a partition of the fuselage. The axle is placed between two tubes and is enclosed in a streamline casing. The wheel track is 1.75 m. The wheels are 760 by 100 and the springing is of rubber cords.

It has been said that the D.II. Roland, owing to its light construction, often suffers from a deformation of its fuselage and is very apt to spin. No test of this machine having yet been possible, this opinion cannot be based on the evidence of our own aviators. It is, however, certain that this machine which was quite a new idea at the time of its creation has been among the best of the German chaser machines, and was still in use in May in certain of the enemy escadrilles.

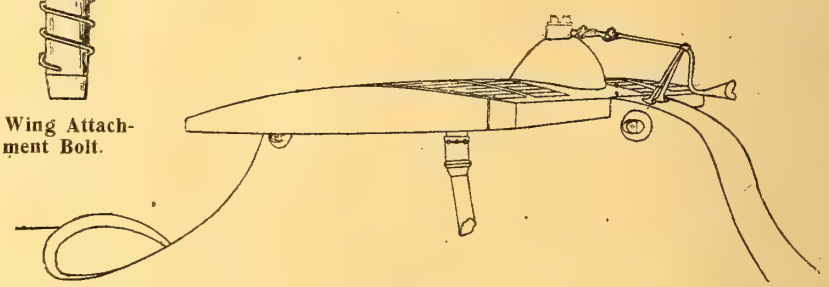


Rib Section.



Upper Wing of the Roland, showing radiators.

Wing Attachment Bolt.



General Scheme of the raised portion of the Fuselage in front of the pilot.

The Design and Construction of Internal Combustion Engines, with special reference to Aero Engines.—X.

BY C. SYLVESTER.

Author of "The Conversion of Electrical Machinery," "Testing Motors and Motor Starters," etc., etc.

[The writer desires to thank the Air Ministry who have supplied, and have given him permission to describe, the A.I.D. forms Nos. 34, 35, and 36 used in this article.]

ALIGNMENT.

One of the first items to receive full consideration when laying an engine down for test is alignment. To say that an engine is in perfect alignment means that the centre line through the crank-shaft is continued in a perfectly straight line through the dynamometer and starting motor, when one is used.

Where large engines are concerned this is more important than when dealing with small engines, such as aero engines. In the former case the connection is made between the engine and the dynamometer with large steel couplings. In the latter case flexible couplings may be used which will allow for a slight radial variation in the alignment.

SHAFT EXPANSION.

In all types of engines, whether large or small, adequate allowance must be made for the expansion of the shaft.

It is a well-known fact that when an engine has been running for some time and the shaft becomes warm, the length of this shaft increases. The amount of expansion depends upon the size of the engine and, as a guide, it may be said that in large engines this expansion is sometimes equal to a quarter of an inch. Here, the expansion is allowed for by fitting claw couplings between the engine and the dynamometer.

With small engines, where the speed is much greater, it is quite apparent that a claw coupling would not be a great deal of use. It is, therefore, good practice to fit a flexible coupling that will give in a lateral direction.

TESTING LARGE ENGINES.

Testing large internal combustion engines is a long and important operation. That these tests should be of a long duration is quite clear, when it is understood that defects in the design do not manifest themselves in short tests. Again, it is only on long tests that the actual horse-power of the engine can be correctly ascertained.

It is the usual practice to run an engine under test conditions, for about 75 per cent. of the period allotted for the test, before the actual test occurs. Thus it gives the engineer-in-charge a good idea of the temperatures of the oil for lubricating, and the water for cooling. These, after taking the test-shop temperatures into consideration, being predetermined, it is quite easy to trace any irregularities that may occur in the temperatures during the actual test.

Space here will not permit the full details of testing large engines. Just a brief description will meet the case.

MEAN EFFECTIVE PRESSURE.

On official tests each cylinder is fitted with an indicator for taking indicator diagrams. From this diagram, before the indicated horse-power may be determined, the Mean Effective Pressure is obtained by dividing the diagram into eleven equal parts. The two outside parts are really half parts, and are ignored when making the calculation. The total length of the ten inside ordinates are now added together, and this sum, in inches, is divided by ten. The result, multiplied by the scale of the spring used in the indicator, will give the Mean Effective Pressure.

When this is obtained, the I.H.P. of each cylinder may be determined by the following formula:—

$$\text{I.H.P.} = \frac{\text{M.E.P.} \times N \times S \times A}{33{,}000}$$

That is where:—

A is the area of the piston in sq. inches.

S is the stroke of the engine in feet

S is the stroke of the engine in feet.

and M.E.P. is the mean effective pressure, that is, lbs. per sq. inch.

B.H.P. *v.* I.H.P.

The brake horse-power of an engine may be said to be the indicated horse-power, less the losses in the engine. That is, it is the power available at the shaft of the engine.

In other words, it is the power that will be registered on the dynamometer. The ratio between the indicated horse-power and the brake horse-power may be said to be the efficiency of the engine, since the losses in the engine are not registered.

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L.T.D.

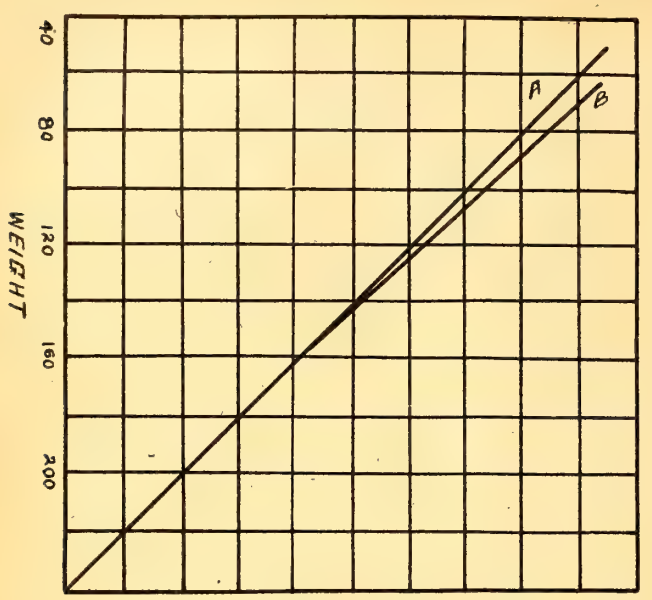


Fig. 38.

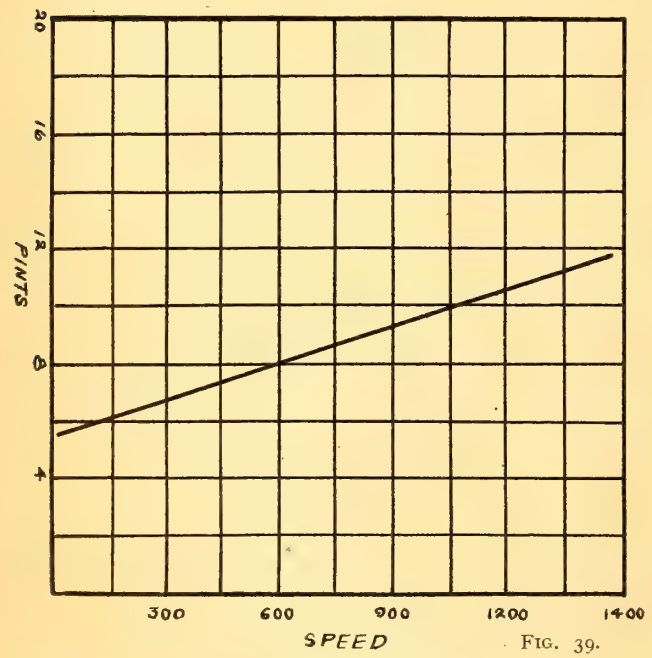


Fig. 39.

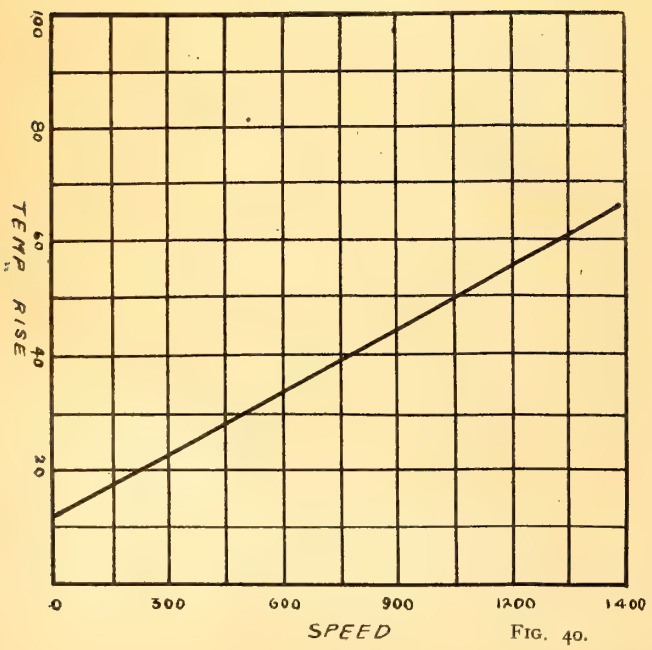


Fig. 40.

I.H.P. of Aero-Engines.

It is not possible to use an indicator for taking indicator diagrams when testing an aero-engine. The mean effective pressure can, however, be roughly obtained from a speed and power curve.

The compression ratio is really the most important item, this being the ratio between the air compression and the explosion pressure. Both these pressures are obtained by means of a compression indicator, this instrument indicating the pressure in the combustion chamber in lbs. per sq. inch.

Speed *v.* Load.

At low speeds, the speed of an engine is in proportion to the load placed upon it; that is, if the position of the carburetter throttle is unaltered.

As an example, we will presume that the speed is 800 r.p.m., and that the weight lifted by the dynamometer is 80 lbs. Then, at 400 r.p.m., the weight lifted would be 160 lbs.

From this is would appear that a power curve taken from an engine at varying speeds with the maximum load would be practically a straight line, as illustrated at A, Fig. 38. This is not so, for after about 50 per cent. of engine speed there is a decided falling off in the ratio of the weight lifted and the speed, as shown at B in this diagram.

The oil consumption is not in proportion to the speed, the correct condition being shown in Fig. 39, this illustrating a curve taken from a 180 h.-p. engine.

Cooling water temperatures are also out of proportion to the speed and power developed by an engine, as illustrated in Fig. 40. In this graph the zero line indicates the shop temperature.

Official Testing.

All official tests of aero-engines are carried out under the strict supervision of the Aeronautical Inspection Department.

From the cutting of the test pieces from the rough forgings, to the dispatch of the finished engine, this department has the whole of the operations under supervision. This is a most desirable practise from both the Air Ministry and the Contractor's point of view.

In the former case it guarantees a certain performance, in the latter, all responsibility ends when once the engine has been tested and dispatched.

Running In

It is not proposed to go into details concerning running in. Carburation and the testing of sparking plugs have been adequately referred to in previous articles. These are the items that should receive special attention from the tester if there is much difficulty in starting the engine.

When trouble occurs it is essential that something should be done to put matters right, but it is most essential that the right thing should be done. If the construction of the sparking plug, and the theory of carburation is understood, these, with a certain amount of common sense, should overcome any minor difficulties the tester may experience when running in.

A.I.D. Form No. 34.

From a glance at this form it will be noticed that it is arranged to record two tests. One is an endurance test of two hour duration, the other being the final test. The figures on the sheet indicate that the final test is of one hour duration.

This is not always the case, because the period of the final test is determined by the oil and petrol consumption of the duration test.

The duration test is very severe, the full h.-p. having to be maintained throughout the whole period. The temperature of the shop is also a very important item, because this must be taken into consideration when considering the oil and water temperatures.

It might be thought, when giving the matter a casual consideration, that the shop temperature should not be of such importance. This is a mistake, for the temperature of any test shop is likely to increase or decrease twenty degrees at any time. This is understood when it is considered that in large shops, where a dozen engines may be placed on test in almost as many minutes, an increase of twenty degrees on the shop temperature is a small matter.

This is of course quite another matter if only one engine is on test. In this case, an increase of twenty degrees should make the tester jump about to try and ascertain what was wrong.

Oil Consumption.

Next to shop temperatures, the oil consumption is the most important item. It is most essential that the oil consumption of an engine should be accurately determined, because the period of its subsequent running is regulated by this fact.

It is not necessary, in this article, to state the minimum and maximum limits for oil consumption of various types of engines. It may be said, however, that before an engine is passed by the Aeronautical Inspection Department, the oil consumption must be between certain limits.

A.I.D. Form No. 35.

After the endurance test all engines are stripped and every

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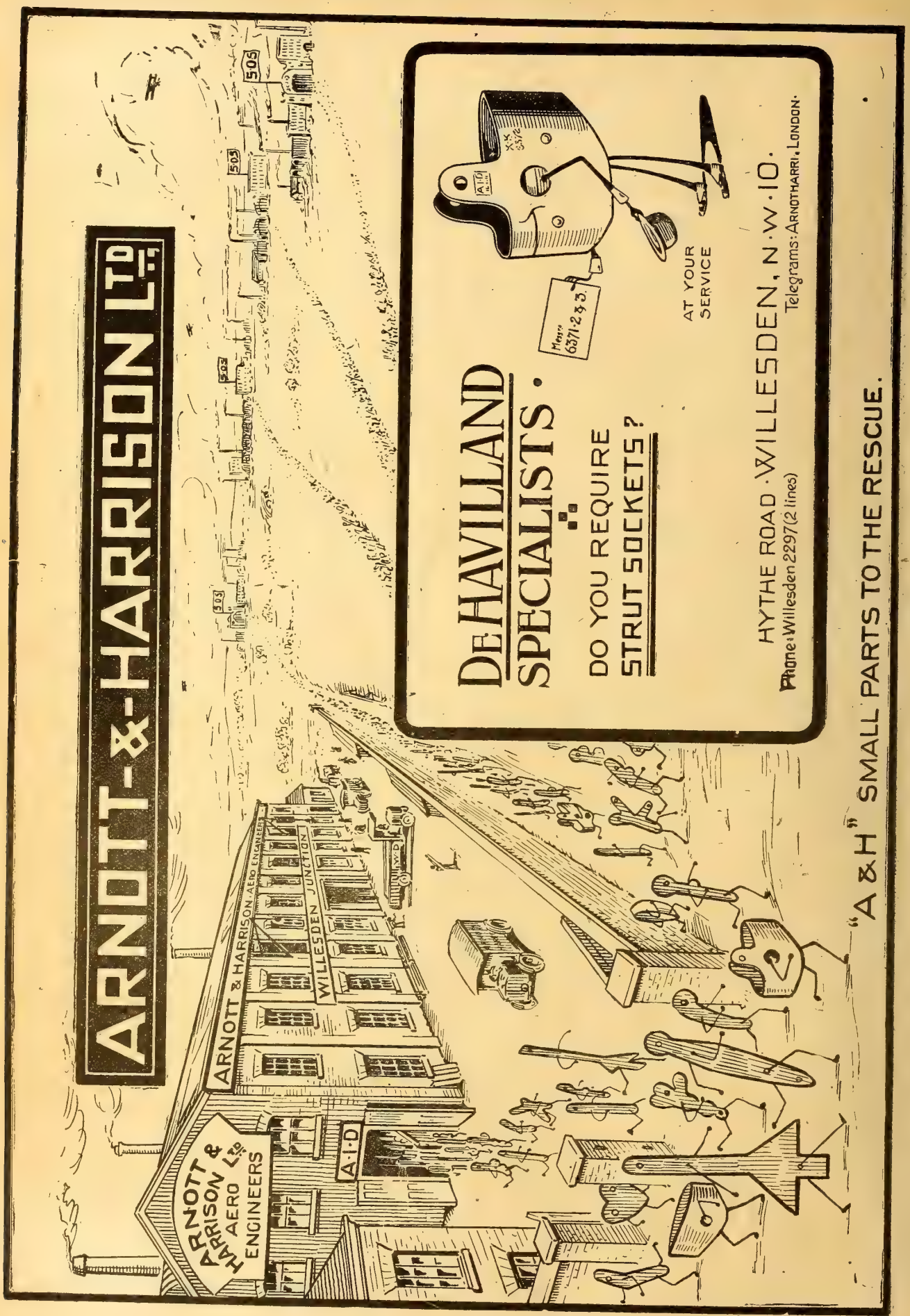
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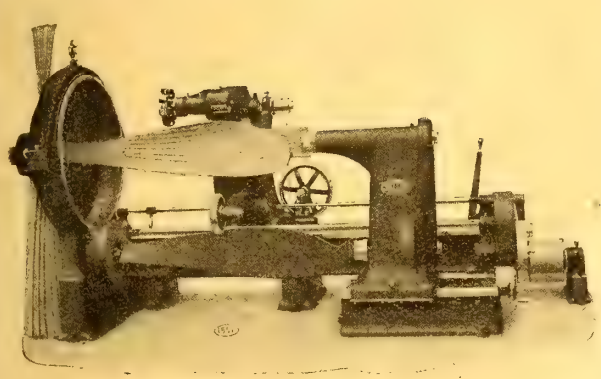
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Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines).

British Metal (Kingston), Ltd., Kingston-on-Thames.

Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.

Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham." Central 793.

MacLennan, J., & Co, 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—

Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.

Mann, Egerton & Co., Ltd., 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.

Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines).

Nameplates and Labels—

British Metal (Kingston), Ltd., Kingston-on-Thames

The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Oils—

C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2 "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—

E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London." London Wall 3266-3267.

Pattern Making—

Fredk. Ward, 6, 7 and 8, Allsop Street, Upper Baker Street, W. Padd. 4743.

Piston Rings—

British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.

The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.

Plating, Nickel Silver and Electro Tinning—

Arnold & Sons, Lawrence Road, Tottenham, N.15.

Power Presses and Dies—

Bliss, E. W., & Co., 2a, Pocock Street, Blackfriars Road, London, S.E.1. "Blissdon, London." Hop. 4340.

Presswork—

Rubery Owen & Co., Darlaston, South Staffs.

Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Propellers—

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)

Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.

Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames. "Ebora, Kingston." Kingston 672.

Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104.

Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521

Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).

Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." 24214 Leeds.

Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.

Westland Aircraft, Yeovil. "Aircraft, Yeovil. Yeovil 129.

Propeller Cases—

The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—

The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—

Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rigging for Aircraft—

Cradock, Geo., & Co., Ltd., Wakefield, England "Cradock, Wakefield." Wakefield 466

Screw-driving Machines—

Russell Bros. (Redditch), Ltd., Littleworth. Redditch. "Inventors, Redditch." Redditch 74.

Seaplane Manufacturers—

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).

Gosport Aircraft Co., Gosport. "Flight, Gosport" Telephone No. 217.

Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).

Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.

Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Southampton 1337.

Seats for Aeroplanes—

Bowser, E., 50, Park Lane, Leeds. Leeds 21953.

Searchlights & Landing Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Shackles—

British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—

Accles & Pollock, Ltd, Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).

Arnold & Sons, Lawrence Road, Tottenham, N.15.

Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345.

W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550.

British Metal (Kingston), Ltd., Kingston-on-Thames.

London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.

Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—

The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London" Vic 4830.

Arnold & Sons, Lawrence Road, Tottenham, N.15.

British Metal (Kingston), Ltd., Kingston-on-Thames [Staffs.

Rubery Owen & Co, Darlaston, South

The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.

Arthur Hill & Co, Silchester Road, North Kensington, W. Park 1443.

Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London" Victoria 3540 (3 lines).

BUYERS' GUIDE cont. on next page.



The · Aeroplane ·

Acceptance and Experimental Flights—
The Prodger Isaac Aviation Co. "Aeromnia, Piccy, London" Gerrard 278 (2 lines).

Acetylene Welding Plant—
Acetylene Corporation of Great Britain, Ltd., The, 59, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London" Vic 4830
Imperial Light, Ltd., 125, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Aeroplane Manufacturers—
Aircraft Manufacturing Co., Ltd., Hendon "Airmanship, Hyde, London" Kingsbury 220.
Armstrong, Sir W., Whitworth & Co., Ltd., Newcastle-on-Tyne "Armstrong Aviation, Newcastle-on-Tyne." Gosforth 500
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds" Roundhay 345 (5 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich" Norwich 851
British & Colonial Aeroplane Co., Ltd (The Bristol Co.), Filton, Bristol "Aviation, Bristol" Bristol 2000
British Caudron Co., Ltd., Broadway, Cricklewood, N.W.2. "Caudroplan, Crickle, London." Hampstead 5551.
Central Aircraft Co., High Road, Kilburn, N.W.6. "Aviduction, Phone, London" Hampstead 4303 and 4424
Davidson Aviation Co., Ltd., Hammersmith, W.6 Hammersmith 1092 (2 lines).
Dawson, John, & Co., Ltd., Newcastle-on-Tyne "Dependable, Newcastle-on-Tyne" Central 2604 (2 lines)
Eastbourne Aviation Co., Ltd., Eastbourne. "Aircraft, Eastbourne" Eastbourne 1176.
Grahame-White Aviation Co., Ltd., London Aerodrome, Hendon. "Volplane, Hyde, London" Kingsbury 120
Handley Page, Ltd., 110, Cricklewood Lane, N.W.2. "Hydrophid, Crickle, London" Hampstead 7420
Hooper & Co., Ltd., 54, St. James St., Piccadilly, London, S.W. "Sociable, St James, London" Regent 912
Mann, Egerton & Co., Ltd., Norwich "Motors, Norwich" Norwich 482 (4 lines)
Martinsyde, Ltd., Brooklands, Byfleet, "Martinsyde, Weybridge" Woking 331, Byfleet 171
National Aircraft Manufacturing Co., Ltd., 15, Drummond Crescent, Seymour Street, Euston. Museum 3373
"Nieuport" & General Aircraft Co., Cricklewood, London, N.W.2 "Nieuscout, Crickle, London" Willesden 2155
The Regent Carriage Co., Ltd., 126/132, New King's Road, Fulham, S.W.6 "Carbadis, London" Putney 2230-2231
Roe, A. V., & Co., Ltd., Manchester "Triplane, Manchester" City 8630-8631, Manchester
Saunders, S. E., Ltd., East Cowes, I.O.W "Consuta, East Cowes" Cowes 103
Short Bros., Rochester, Eastchurch and Whitehall House, S.W. "Tested, Phone, London" Regent 378
Sopwith Aviation Co., Ltd., Kingston-on-Thames "Sopwith, Kingston" Kingston 1088 (8 lines)
Standard Aircraft Manufacturing Co., 28, New Common Lane, E. East 2823
Tarrant, W. G., Byfleet, Surrey "Tarrant, Byfleet" Byfleet 13 & 5
Thames Aviation Works, 111, Curtain Rd., E.C.2 London Wall 0766
Vickers, Ltd., Imperial Court, Basil Street, Knightsbridge, S.W.3 "Vickerfyta, Knights, London" Kensington 6810
Waring & Gillow, Ltd., Hammersmith "Warisen, 088, London" Museum 5000
Westland Aircraft, Yeovil. "Aircraft, Yeovil." Yeovil 129.
White, J. Samuel, & Co., Ltd., East Cowes "White, East Cowes" Cowes 3
Whitehead Aircraft (1917), Ltd., Richmond, Surrey "Whitecraft, Richmond, Surrey" Richmond 1080
Wycombe Aircraft Constructors, Ltd., High Wycombe, Bucks "Aircraft, High Wycombe" High Wycombe 80

Airships—
Airships, Ltd., High Street, Merton Wimbledon 1331
Short Bros., Rochester, Eastchurch, and Whitehall House, S.W. "Tested, 'Phone, London" Regent 378

Aluminium Castings (Sand and Die)
Coan, R. W., 21a, Cowell Road, London, E.C.1 "Krankcase, Ishing, London" City 8346

Bent Timber Parts—
Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Lusquare, London" Museum 496
Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough" Market Harborough 14.

Bearings (Etonia Cast Phosphor Bronze)
Yorkshire Engineering Supplies, Ltd., Worsley, Leeds. "Yes, Leeds" Central 3027.

Blowpipes (Oxy-Acetylene)—
Acetylene Corporation of Great Britain, Ltd., The, 59, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London" Vic 4830.
Imperial Light, Ltd., 125, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London" Vic 3540 (3 lines)

Brass Sheets for Tipping Propellers—
Pritt & Co., 46, Fenchurch Street, London, E.C.3 "Poetry, Fen, London." Avenue 695, 900, and 7960.

Buildings—
Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich" Norwich 851
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.
Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey Wimbledon 1313.
Rubery, Owen, & Co., Darlaston, South Staffs
The Willey Co., Ltd., Salisbury House, London Wall, E.C.2. "Wrathless, 'Phone, London." City 2681-2.

Cable Coverings and Cable Controls—
The Bowden Brake Co., Ltd., Tyseley, Birmingham "Bowden, Acock's Green" Acock's Green 103 & 104.
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Carburettors—
Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2. Victoria 1970.

Casein—
Nicrvhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C. 3. "Suricodon, Fen, London" Avenue 34 and 35.

Celluloid (Non-Flam.)—
Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London." Central 1396-7.

Clothing—
Burberry's, Ltd., Haymarket, S.W.1 Regent 2165
Dunhill's, Ltd., Euston Road, N.W.1. "Dunsend, London." North 3405-6

Coloured Rags—
Joseph, A., Earl Street, London Road Southwark, S.E.1. "New Mongo Sodist, London." Hop 85, 361, 4272.

Component Parts—
Accles & Pollock, Ltd., Oldbury, Birmingham "Accles, Oldbury" Oldbury 111 (4 lines).
Central Aircraft Co., High Road, Kilburn, N.W.6 "Aviduction, Phone, London" Hampstead 4303 & 4304
P.D.V. Aircraft Co., Ltd., Princes Street, Richmond "Acros, Richmond" Richmond 1681
Thompson Bros (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros, Bilston" Bilston 10

Cords, Tapes, and Threads—
MacLennan, J., & Co., 30, Newgate Street, E.C.1 And at Glasgow City 3115

Dopes—
British Aeroplane Varnish Co., Ltd., 166, Piccadilly, W.1. "Tetrafree, Piccy, London" Gerrard 2312
British Cellulose Co., 8, Waterloo Place, S.W.1 "Cellulate, London" Regent 4036
The British Emaillite Co., Ltd., 20, Regent Street, S.W.1. "Ridleyprin, Piccy, London" Gerrard 280
Cellon, Ltd., 22, Cork Street, London, W.1 "Ajacels, Rex, London" Gerrard 110
Clark Ingham, Robt., and Co., Ltd., Walter House, Bedford Street, Strand, W.C.2 "Pearline, Westrand, London" Regent 4025

Engines and Parts—
Allen, W. H., & Co., Ltd., Bedford "Pump, Bedford" Bedford No. 1
Arrol Johnston, Ltd., Dumfries "Mocar, Dumfries" Dumfries 254-252
The Beaty School of Flying, Ltd., The Broadway, Cricklewood, N.W.2 Hampstead 4000

Engines and Parts—
Beardmore Aero Eng., Ltd., 112, Great Portland Street, W.1. "Beardmore, London." Gerrard 238.
Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W.1. "Aerolight, Vic, London." Vic 7926.
Gordon Watney & Co., Ltd., Weybridge. "Mercedes, Weybridge" Weybridge 530 (7 lines).
Green Engine Co., Ltd., Twickenham Richmond 1203.
Gwynnes, Ltd., Hammersmith, W. "Gwynne, Hammersmith." Hammersmith 1910
Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London" Gerrard 8920
Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London" Gerrard 1634-5-6
Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton" Wolverhampton 385
The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1 "Elevenfold, London" Walthamstow 408 (2 lines).

Electrical Accessories—
Belling & Co., Montagu Road, Upper Edmonton, N.18. "Belling, Edmonton" Tottenham 1084.
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2207; London Wall 1564
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Eusroad, London." Museum 70
Premier Electric Heaters, Ltd., 258, 259, and 260, Bradford Street, Birmingham. "Fahrenheit, Birmingham" Midland 981
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10 "Rodynalite, Phone, London." Willesden 2480

Electric Cables—
E. Kalker and Co., Coventry "Kalker, Coventry" Coventry 241x
Johnson & Phillips, Ltd., Charlton, London S.E.7 "Juno, London" Central 2207; London Wall 1564

Electric Lighting and Power—
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564
Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Eusroad." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—
W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines).

Enamel—
Silica Enamel Co., New Cross, London, S.E.

Flare Lights—
Imperial Light, Ltd., 125, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London" Victoria 3540 (3 Lines).

Flexible Shafts—
Herbert Terry & Sons, Ltd., Redditch "Springs, Redditch." Redditch 61

Fluxes—
Imperial Light, Ltd., 125, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools—
Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton" Bournemouth 1160
Cambridge School of Flying and Aerodrome Co., 108, St. Andrews Street, Cambridge. "Carbon, Cambridge" Cambridge 5 and 1086.

Furniture (Office)—
Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2 London Wall 573 and 6179.

Galvanising—
Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich" Norwich 851.

Gauges—
J. & J. Prestwich & Co., Northumberland Park, Tottenham, N.17

Gears—
Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham "Mosgear, Birmingham" East 407



· Buyers' · Guide.

Glue—
Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4 "Boccolim, Cannon, London" City 1220
Improved Liquid Glues Co., Ltd., 141 Hermitage Street, E. (Croid) "Excroiden, Wapp, London." Avenue 3475
Meadline Co., 8, Arthur Street, E.C. Bank 5873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3

Goggles—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1 "Shatterlys, Piccy, London." Regent 1330.

Hack Saw Blades and Machines—
Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London" London Wall 1889

Heating and Ventilating—
Chas. P. Kennell & Co., Ltd., 62a & 63, Southwark Street, London, S.E.1 "Kinnell, London" Hop 372 (2 lines)
Sturt van Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4 "Sturtevant, London." Central 7121 (6 lines).

Hollow Spars
McGruer Rentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 712.

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C. Holborn 1308

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge "Instrument, Cambridge." Cambridge 612.
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17 "Aneroid, Phone, London" Walthamstow 180

Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London "Pegamoid, Cent, London." City 9703 (2 lines)

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1 "Vicksmag, Phone, London" Museum 410
The British Thomson Houston Co., Ltd., Lower Ford Street, Coventry "Axtoroidal, Coventry" Coventry 278
The M-L Magneto Syndicate, Ltd., Coventry "Corlton, Coventry." Coventry 1008-1009

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham "Clifford, Birmingham" Central 4214 Avenue 1152

Metals in General
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.
Pritt & Co., 46, Fenchurch Street, London, E.C.3 "Poetry, Fen, London" Avenue 695, 900, and 7960
Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London." City 6342

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury" Oldbury 111 (3 lines)
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London" Holborn 4090
Aircraft Supplies Co., Ltd., Ascot House, 125, Long Acre, W.C.2 "Upcast, Rand, London" Gerrard 270 (2 lines)
Arnott & Harrison, Ltd., Blythe Road, Willesden Junction Willesden 2207
Bayliss, Jones & Bayliss, Ltd., Wolverhampton (Bolts and Nuts) "Bayliss, Wolverhampton" Wolverhampton 1011
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds" Roundhay 345 (5 lines)
British Metal (Kingston), Ltd., Kingston-on-Thames
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3 Avenue 1302
Lombard Elm and Tube Co., Lombard Street, Birmingham "Lombardia, Birmingham" Midland 211 (2 lines)

Metal Parts and Fittings—
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Eusroad, London." Museum 70
Mountford, Fredk., Ltd., Lifford, Birmingham "Fremo, Birmingham" King's Norton 201
Rubery, Owen & Co., Darlaston, South Staffs
Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop" Wellington 60
The Pulvo Engineering Co., Ltd., 10 to 19, Dane Street, High Holborn, London, W.C.1 "Pulvopult, Phone, London." Holborn 410.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selsaero, Phone, London" Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10 "Rodynalite, Phone, London" Willesden 2480.
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston" Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol "Ingenuity, Salteford." Keynsham 21.

Metal Spinnings—
Arnold & Sons, Lawrence Road, Tottenham, N.15

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs), Belfast "Anderson, Belfast" Belfast 1033, 1034-1035
Bowden Wire, Ltd., Willesden Junction, "Bowirchin, Harles, London" Willesden 2400 (2 lines)
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1 "Inbrowned, Betroad, London" London Wall 0320
Herbert Frood Co., Ltd., Chapel-en-le-Frith "Frodobrake, Birmingham" Central 795
MacLennan, J., & Co., 30, Newgate Street, E.C.1, and at Glasgow. Tapes, Cords and Threads City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries "Mocar, Dumfries" Dumfries 254-252
Mann, Egerton & Co., Ltd., 347/351, Euston Road, London, N.W.1. "Mangecar, Eusroad, London" Museum 70
Standard Motor Car Co., Coventry "Flywheel, Coventry." Coventry 530 (4 lines).

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1330.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2 "Cheery, Cent, London" Central 11305 and 13400.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Sayemal.vo, Ave, London" London Wall 5266-5267.

Pattern Making—
Fredk. Ward, 6, 7 and 8, All-up Street, Upper Baker Street, W. Paddington 4745.

Piston Rings—
British Chuck & Piston Ring Co., Coventry. "Rings, Coventry" Coventry 721
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield "Ocean, Sheffield" Sheffield 2140

Plating, Nickel Silver and Electro Tinning—
Arnold & Sons, Lawrence Road, Tottenham, N.15

Power Presses and Dies—
Bliss, E. W., & Co., 2a, Pocock Street, Blackfriars Road, London, S.E.1 "Blissdon London" Hop. 4340

Presswork—
Rubery Owen & Co., Darlaston, South Staffs
Pegs, Herbert & Sons, Ltd., Redditch "Springs, Redditch" Redditch 61

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds "Propellors, Leeds" Roundhay 345 (5 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich" Norwich 851
Eborn Propeller Co., H. & L., Surbiton Park Terrace, Kingston-on-Thames "Eborn, Kingston" Kingston 63
Integral Propeller Co., Ltd. "Avipro, Hyde, London" Hendon 9 Kingsbury 104
Lang Propeller, Ltd., Weybridge "Aerosticks, Weybridge" Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich "Motors, Norwich" Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds "Airscrews, Leeds" 1414 Leeds
Stanley Aviation Co., 67, Kingsland Road, E.2 City 8342
Westland Aircraft, Yeovil. "Aircraft, Yeovil. Yeovil 129.

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts Foster Instruments, Letchworth Letchworth 26

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England "Cradock, Wakefield" Wakefield 160

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch "Investors, Redditch" Redditch 74

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds "Propellors, Leeds" Roundhay 345 (5 lines)
Gosport Aircraft Co., Gosport "Flight, Gosport" Telephone No. 217
Mann, Egerton & Co., Ltd., Norwich "Motors, Norwich" Norwich 482 (4 lines)
Short Bros., Rochester "Seaplanes, Rochester." Chatham 43
Supermarine Aviation Co., Ltd., Southampton "Supermarine, Southampton" Southampton 1537

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds Leeds 21933

Searchlights & Landing Lights—
Imperial Light, Ltd., 125, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria 3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10 "Rodynalite, Phone, London" Willesden 2480.

Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex "Golshel, Hounslow" Hounslow 254

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines)
Arnold & Sons, Lawrence Road, Tottenham, N.15.
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds "Propellors, Leeds." Roundhay 345
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Briscs, Bham." Central 880
British Metal (Kingston), Ltd., Kingston-on-Thames
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham East 497 Birmingham
Rubery Owen & Co., Darlaston, South Staffs

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 59, Victoria Street, S.W.1. "Flamma, Vic, London" Vic 4830
Arnold & Sons, Lawrence Road, Tottenham, N.15
British Metal (Kingston), Ltd., Kingston-on-Thames [Staffs
Rubery Owen & Co., Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1 "Selsaero, Phone, London" Regent 1181
Arthur Hill & Co., Silchester Road, North Kensington, W. Park 1116
Imperial Light, Ltd., 125, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London" Victoria 3540 (3 lines).

BUYERS' GUIDE cont. on next page.

"The Aeroplane" Buyers' Guide.—*continue*

Small Tools—
The Small Tool Supply Co., Ltd., Avenue Chambers, Southampton Row, W.C. "Prosait, West-Cent., London." Museum 2655.

Sparking Plugs—
Lodge Sparking Plug Co, Ltd., Rugby. "Igniter, Rugby." Rugby 235.
Ripault, Leo. & Co., Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

Springs—
Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Stampings—
Arnold & Sons, Lawrence Road, Tottenham, N.15.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3. Avenue 1432.

Steel—
Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 to 3237.
Guthrie, J. B., & Son, 30, St Mary Axe, E.C.3. Avenue 1432.
Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Steel Stamps and Markings—
John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).

Tanks & Cowls for Aeroplanes
Zephyr Ventilating Co., Ltd., Tyopiatt Road, Bristol. Telegrams — Zephyr, Bristol

Taper Pins—
Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—
MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Timber—
Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526.
Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.
J. Owen & Sons, Ltd., 109a, Borough High Street, S.E.1. "Bucheron, London." Hop 3811 (2 lines).

Time Recorders—
Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles—
Rubery Owen & Co., Darlaston, South Staffs.
Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W "Installing, Euston road." Museum 70 (4 lines).

Tyres and Wheels—
The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent." Gerrard 1214 (5 lines).

Undercarriages—
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.
Clark Ingham, Robt., & Co., Ltd., Walter House, Bedford Street, Strand, W.C.2. "Pearline, Westrand, London." Regent 3923.
Harland, W., & Son, Merton, London, S.W.19. "Harland, Wimbledon 45." Wimbledon 45 and 1395.
Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—
Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95.

Washers— Avenue 1432.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3
Terry, Herbert, & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Watchmakers and Jewellers—
(Silver Models)—
Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines).

Welding and Cutting Plant—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma Vic, London." Vic 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Welding Repairs—
Arnold & Sons, Lawrence Road, Tottenham.
Barimar, Ltd, 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.
The New Welding Co., 26, Rosebery Avenue, London, E.C.1. "Windoneeda, Holb, London." Holborn 5252.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Wind Shields—
Auster, Ltd., 133, Long Acre, W.C. "Winflector, London." Regent 5010.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesdon Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Wire Gauze—
Greening, N., & Sons, Ltd., 16, Finsbury Street, London, E.C.2. "Setscrew, Finsquare, London." London Wall 1082.
Guthrie, J. B., & Son, 30, St Mary Axe, E.C.3. Avenue 1432.

Wires and Cables—
Bruntons, Musselburgh, Scotland. "Wiremill, Musselburgh." Musselburgh 28.
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466 (3 lines).

Wirework—
Terry, Herbert, & Sons Ltd., Redditch. "Springs, Redditch." Redditch 61.

Woodworking Machinery—
Robinson, Thomas, & Son, Ltd., Rochdale. "Robinson, Rochdale." Rochdale 467.
Sagar, J., & Co., Ltd., Halifax. "Sawtooth, Halifax." Halifax 136.
Wadkin & Co., Leicester. "Woodworker, Leicester." Leicester 3614.

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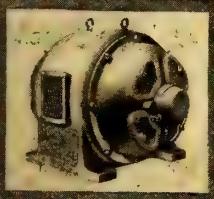
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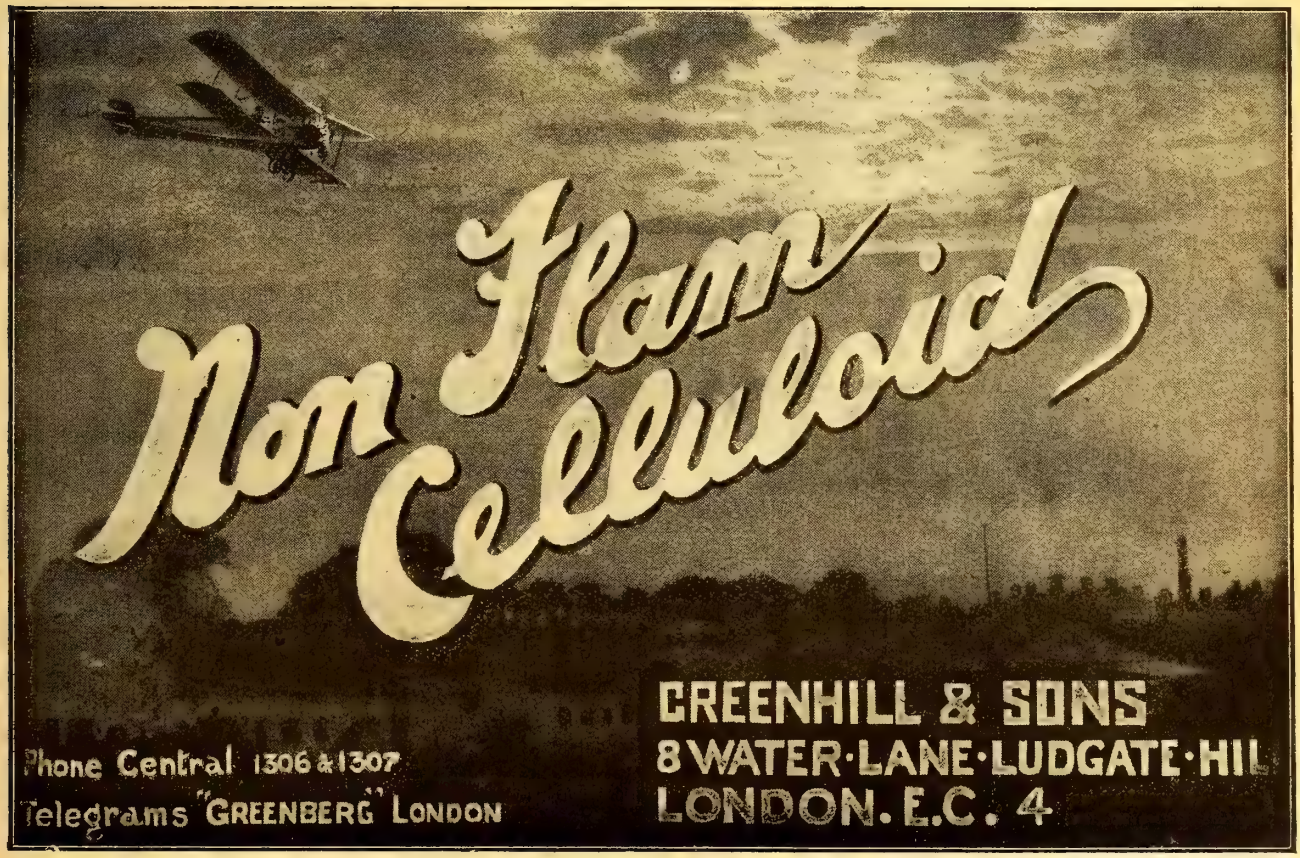
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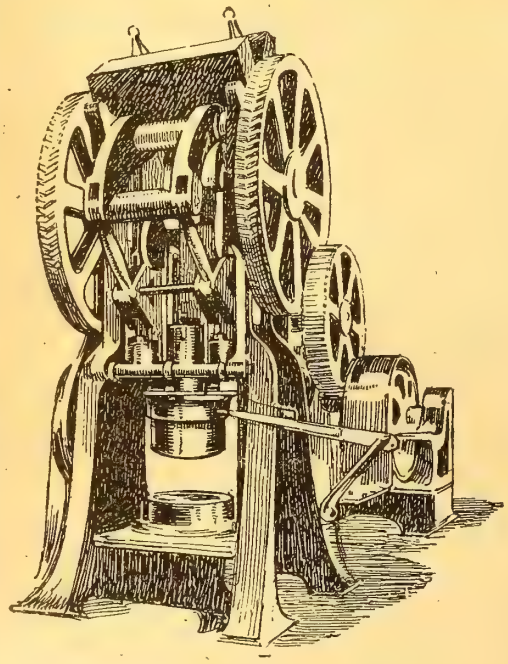
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List No. 38.
Price 32/-
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Strongly made in cast iron, the Glue container being tinned.
CAPACITY: 2 pints of glue.
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3 elements, 3 heats, 3 loose connectors for attaching the cable to.
WEIGHT: 14 lbs.
For use off a power circuit.



List No. 39.
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As above, but with a loading of only 600 watts so that it can be used off an ordinary lamp socket.
Complete with connectors, 2 yards flex, and lamp holder adaptor.

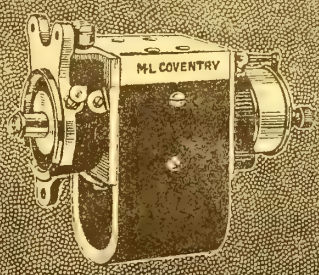


List No. 40.
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(Spare Elements 3/6 each)

Similar to List No. 38, but fitted with a 3 heat switch on a separate panel, which is connected to the Glue Pot by 4 feet of metallic flexible tubing.
For use off a power circuit and recommended for Factory work.

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Correct Treatment.

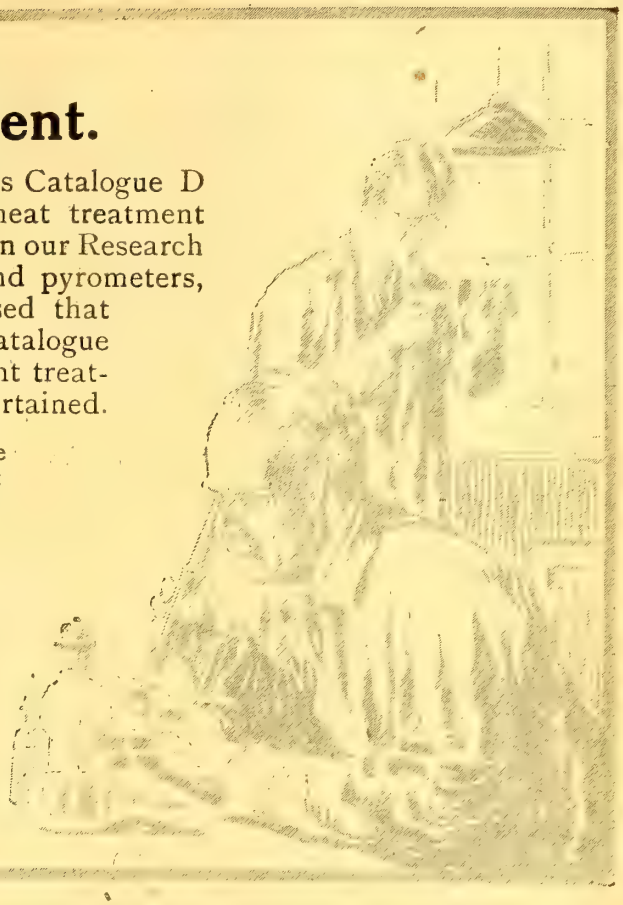
IN Allen's Aeroplane and Motor Steels Catalogue D (Post Free on request) figures for heat treatment are given. These are the figures found in our Research Laboratory, but as not only furnaces and pyrometers, but also requirements, vary, it is advised that a few test pieces be treated, with the Catalogue D temperatures as a guide, and the right treatment for each special purpose thus ascertained.

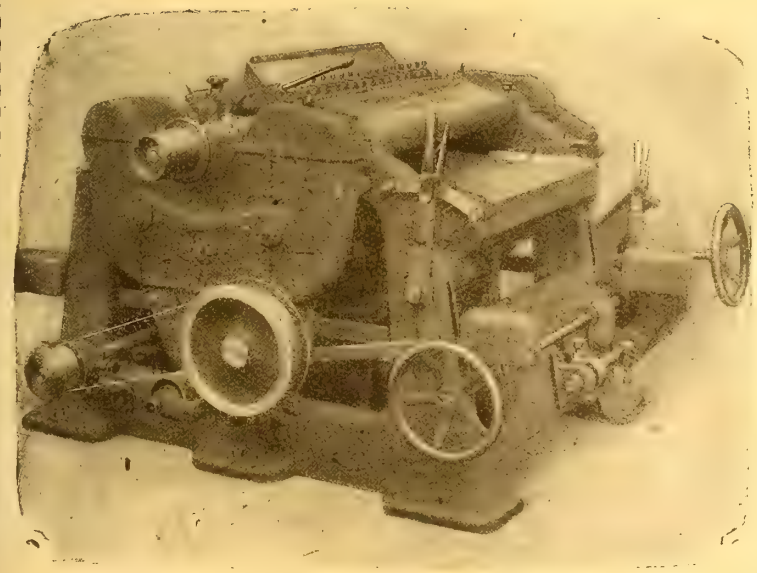
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A.I.D TEST REPORT

AERONAUTICAL INSPECTION DEPARTMENT

Engine No. 07 Type T W.D.N.
Date of 3 hr test 29 May 1918
Petrol in tank 100 galls S.G. 725 at 60 F
Petrol added Nil galls Total 100 galls
Petrol left 80 galls 640 pts
Petrol used in pts./hr 80 pts. per B.H.P. hr
Oil in base 46 pts
Oil added Nil pts Total 46 pts
Oil taken out 20 pts Temp 130 F
Oil used 26 pts 13 pts per hr
Time of start 12-0 a.m. (a.m. or p.m.)
First reading 1200 r.p.m. 194 lbs. brake load 184 B.H.P.
Average B.H.P. for 3 hrs 194
Opened out to 205 B.H.P. at 1200 R.P.M.

REMARKS
Wind speed—press in inches of water head (3 readings) Varies
Temperature of Shop (3 readings) 50 60 60 °F
Valve tappet clearances EXHAUST — INLET —
Carb jets 320
Plugs X.Y.Z
Magneto Nos 534 Type X.Y.Z.
Examiner T. P.
FINAL 6 hour test 31 May 1918

Time (a.m. or p.m.)	r.p.m.	brake load	b.h.p.

Oil put in 40 pts. Petrol put in 80 pts.
Oil taken out 30 pts. Petrol taken out 10 pts.
Oil used 10 pts. Petrol used 70 pts.
Petrol pts. per hr 70
Jets 320
Magnetos type X.Y.Z.
No 1234
Ran 6 hrs. on engine 4321
Lbs. per sq. in. air pump pressure 5
FINAL 30 secs 1200 r.p.m. Brake b.h.p.
Examiner

part is examined. All defective parts are thrown out and new parts fitted. If an entirely new part is fitted, then the engine must do another two hours' endurance test.

Taking the items on this form in rotation (these being numbered from 1 to 13 for convenience) it can be seen that the inspection is of a very strict nature. Briefly described, the faults likely to occur may be stated as follows :—

1. This is likely to be scored, or, any imperfection in the forging may be detected. These would take the form of cracks, overlaps, etc.
2. The air-screw shaft serrations, or feathers, may be damaged The cam-shaft may be distorted, or the cams may be too soft.
3. This may be distorted.
4. Magnetos are examined from a mechanical point of view only. That is, gearing, distributor, contacts, etc.
5. Couplings, and teeth of bevel gearing, where used, are examined for undue wear.
6. The same may be said here.
7. These items are very important. Cracks and flaws in casting are carefully searched for.
8. Examined for wear of bearings, distortion of shells, twists, undue wear at small end, etc.
9. Pistons and rings are examined for wear. Clearances, and the gap of the rings are carefully checked. Gudgeon-pin bearings are carefully examined.
10. Examined for piston ring wear. Also for distortion.
11. Valve seatings are examined to detect burning. Any sign of softness is also carefully searched for. Valve springs are examined for the same reason.
12. The piston and cylinder are examined for wear and distortion.
13. All special items are noted under this heading. If, on examination, any new parts have been fitted, or if a doubt exists concerning any part, these items are noted.

A.I.D. FORM NO. 36.

This form is divided into two sections, the first dealing with the inspection during the re-erection of the engine prior to the final test. The second portion, which is self explanatory, is not used until after the final test and the engine is ready for dispatch.

IN GENERAL.

The above remarks concerning the test of aero engines go to show that the tests are substantial, and are necessary in order

A.I.D. TEST REPORT

INSPECTION DURING RE-ERECTION

R.A.F. _____ type Engine No. _____ _____ 191

(1) Crankshaft in case _____
(2) Pins and locking plates _____
(3) Gear wheel clearances _____ Type of gear _____
(4) Con rod clearances _____
(5) Oil pump gears _____
(6) Magneto gears _____
(7) Joint surfaces _____
(8) Valves and seatings _____
(9) Induction pipe erected _____
(10) Oil ring clearances _____

_____ Examiner

No.

INSPECTION BEFORE DESPATCH.

Valve tappet clearances _____ Exhaust _____
Inlet _____
(2) Magneto setting _____ R.H. _____ Gap _____
L.H. _____ Gap _____
(3) Magneto driving gear _____
(4) Magneto lined up _____
(5) Base washed out _____
(6) Carburetters and controls fitted _____
(7) Engine cleaned and protected for transit _____
(8) Cowl and baffle plates fitted _____

Passed for despatch _____ 191
Signed _____ Examiner
No.

A.I.D. TEST REPORT.

INSPECTION AFTER ENDURANCE TEST.

R.A.F. _____ Type. Engine No. _____ _____ 191

Crankshaft No.	
Air Screw Shaft No.	
Camshaft No.	
Crankcase No.	
Magnetos	Type Nos.
Magneto Driving Gear	
Oil Pump and Driving Gear	
Induction Pipe, Carburetters and Fittings.	
Con. Rods	
Pistons	
Cylinders.	
Valves and Valve Gear	
Air Pump.	
Remarks.	

Copy to Mr. _____ Examiner _____ No. _____

that all defects may show themselves before the engine leaves the contractors.

After all, the test shop is the correct place for a fault to develop, and be subsequently detected. The heat to which an engine is subjected during a test has a marked effect upon the various materials with which it is constructed. Faults in material which cannot be detected after machining, even after examination by expert viewers with microscopic inspection, are easily detected after being subjected to heat.

With large internal combustion engines, where the running-in occupies the best part of several weeks, faults may be detected more easily. The minor breakdowns are so frequent that the whole of the engine has, at some time or other during the running-in, been taken down and examined. Thus, after the official test there is very little wrong.

As far as general erecting and testing are concerned one thing is certain, the erectors and testers should be experts, each man being placed on the class of work he can best accomplish.

These men should moreover be conscientious. All defects, no matter how small, should be pointed out immediately they are discovered, not some time afterwards when considerably more labour has been spent upon the job.

*The publication of this series of articles in book form is under consideration, when the testing of large internal combustion engines will be fully dealt with.

THE PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by The Aeroplane from the current Official Patents Records.

Patent Applications.

Accornero, L. R. Aeroplanes. No. 10415. June 24th.
Armstrong, Whitworth, and Co., Sir W. G. Apparatus for arresting aeroplanes. No. 10391. June 24th.
Brown, E. E. Struts for aircraft. No. 10442. June 25th.
Bush, G. E. Fire extinguisher for carburettor. No. 10515. June 26th.
Cameron, E. J. Sighting apparatus for anti-aircraft guns. No. 10483. June 25th.
Castle, H. M. Aeroplanes, etc. No. 10384. June 24th.
Fairey Aviation Co. Hydrovanes. No. 10594. June 27th.
Greg, J. R. Automatic apparatus for directing anti-aircraft guns. No. 10386. June 24th.
Harberd, E. H. Silencers for internal combustion engines. No. 10449. June 25th.
Hemingway, G. H. Internal combustion turbine engines. No. 10413. June 24th.
Kelly, T. D. Aircraft. No. 10450. June 25th.
Lanchester, F. W. Motors for aircraft. No. 10390. June 24th.
Lodge, A. M. Sparking plugs for internal-combustion engines. No. 10674. June 28th.
Marter, C. Flying level relating to aircraft. No. 10725. June 29th.
Mayrow, J. J. Aircraft construction. No. 10608. June 27th.
Mears, F. C. Aerial warfare. No. 10752. June 29th.
Naylor, J. Apparatus for indicating angle of aeroplanes in flight. No. 10648. June 28th.
Read, F. Tautness meter for tie-rods, cables, wires, etc., of aircraft and bracing generally. No. 10441. June 25th.
Roe, A. V. Metal girders, spars, etc. No. 10637. June 28th.
Sexton, T. W. O. Means for training guns on aircraft. No. 10707. June 28th.
Smith, J. M. Toy aeroplanes or gliders for children. No. 10429. June 25th.
Stansmore, R. Device for controlling aircraft. No. 10486. June 25th.
Stubbs, D. H. Instruments for aircraft. No. 10561. June 27th.
Swift, J. Air-screw construction. No. 10365. June 24th.
Thomas, G. H. Means for starting engines of aeroplanes. No. 10663. June 28th.
Vaughan, R. E. Direction finders, etc., for wireless signalling. No. 10714. June 28th.
Walton, T. Method of exploding projectiles dropped from aircraft at pre-determined height from the ground. No. 10739. June 29th.

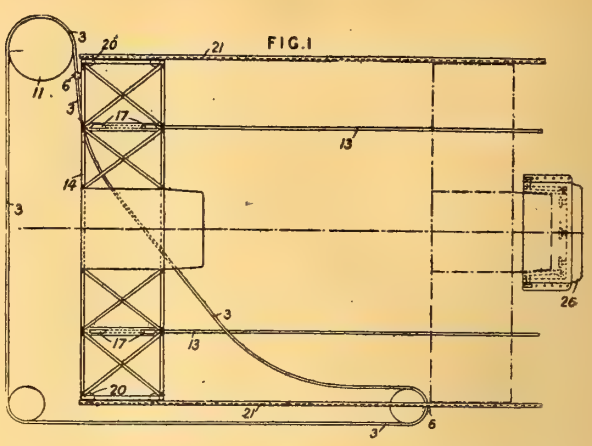
Complete Specifications Accepted, prints of which can be obtained on and after July 18th, 1918.

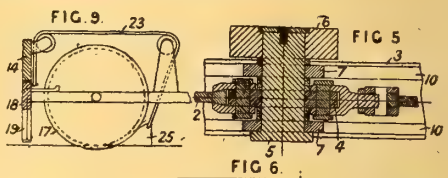
111,084. Oct. 16th, 1916. Soc. des Moteurs Gnome et Rhone. Valve-actuating mechanism for internal-combustion engines.
112,414. Dec. 29th, 1916. Soc. des Moteurs Gnome et Rhone. Valve-actuating mechanism for internal-combustion engines.
116,834. Nov. 6th, 1917. Green, G., and May, F. Engine-starting apparatus.

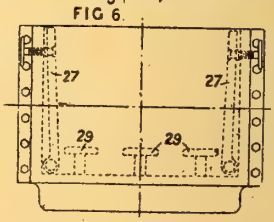
Abridgments of recently published Complete Specifications.

115,445. Launching seaplanes, etc.; buffer stops. Mackay, L. H., 6, Wood Street, Shincliffe, Durham.

A device for launching seaplanes and the like from ships or land comprises a carriage supporting the seaplane and adapted to be moved along rails by a push-roller moving in a curved guide and fixed to a rotating endless cable, a buffer stop being provided







for arresting the carriage, whereupon the seaplane commences its flight. Fig. 1 shows, in plan, one form of guide 3, along which the push-roller 6 is moved by means of an endless cable driven by a pulley 11, the push-roller engaging the rear edge of the carriage 14 provided with rollers 17, 20 engaging rails 13, 21. The push-roller 6 is mounted on a pin 5, Fig. 5, fitted with rollers 7 engaging slots 10 in the guide 3, the cable 2 being fastened to a plate 4 mounted on the pin. Normally, the push-roller 6 can pass through a slot 19, Fig. 9, in the carriage 14; but, when a launch is to be made, the slot is closed by a shutter 18, with which the push-roller then contacts. The carriage may be held stationary when the shutter is raised, by a brake 25 engaging one of the rollers 17 and connected by a chain 23 to the shutter. The buffer stop 26, Fig. 1, comprises a box-shaped structure, Fig. 6, fitted with adjustable gripping-plates 27 and buffers 29. A spring-controlled stop-piece may be fitted to the deck or the stop 26 to limit rebound of the carriage.

A WAGES DISPUTE.

A dispute with regard to the dismissal of a workman at an aeroplane factory in the London district led to a cessation of work in that factory at the beginning of last week. The Ministry of Munitions entered into negotiations with the London Aircraft Committee, with the result that it was agreed on July 3rd that work should be resumed on the 4th, on the understanding that an arbitration should take place on that morning immediately after resumption of work. Consequently, the Aircraft Committee recommended the men concerned to resume work in accordance with the agreement.

The recommendation of the Aircraft Committee was repudiated by an unofficial body of the workmen, with the result that not only did the men in question not return to work, but in the case of one or two other factories there was a similar cessation of work.

The action thus taken was both contrary to the recommendation of the recognised Trade Union leaders and to the provisions of the Munition Acts, and unless there was an immediate resumption of work pending the settlement of the dispute by the constitutional method, which has already been agreed, the Ministry of Munitions would have no option but to consider taking action against those concerned.

THE LOAN OF AEROPLANES.

The Air Ministry receive so many applications for the loan of aeroplanes in connection with movements for raising funds for charitable purposes, and with the collection of funds for providing aeroplanes for service with the Royal Air Force, that the Air Council is now reluctantly obliged to refuse the loan of machines for exhibition or permission for the visits of aeroplanes.

It is officially intimated also that it will no longer be possible to record and maintain a history of the Service career of aeroplanes presented by special subscription.


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COMMERCIAL AERONAUTICS

INTERNATIONAL AGREEMENTS.

One of the most important things that has to be done before aeroplane services can be established on a commercial basis throughout the world is to arrive at some convention or agreement as regards the right of the aerial commercial fleets of any nation to pass through the air over foreign countries. The first broad question is whether the air is to be absolutely free to all or whether it is the property of those who own that land beneath it.

Absolute freedom of the air does not appear to be either practicable or desirable. In the first place it seems evident that any country which imposes duties upon imports must have the right to insist that every aeroplane reaching its shores or boundaries shall come down where its cargo can be inspected.

This being so, some system of control appears to be unavoidable, but the real strength of the case in favour of the maintenance of what is at least nominally the present system lies in the fact that it affords to Great Britain and her Allies a means of controlling practically the whole of the world's aerial routes and preventing serious enemy participation in this highly important development.

If no international agreements at all were made, the development of aerial services would be much restricted, though on balance we should no doubt be better off than other nations on account of the great extent of the British Empire and the large number of districts comprised in it, in which aerial communication is evidently needed in view of the deficiency of railway and road communication between important points.

There appears to be no reason whatever why we should share with our enemies the profits and benefits which may ultimately result from their action, which forced us—apparently, very much against our will—to develop immense aerial fleets and encourage the creation of a very powerful aircraft industry.

Our works and our pilots alike deserve to be kept fully in employment when the war is over, and it is only by getting into our own hands a full share of the commercial development of the world's aerial transport that we can possibly achieve this result.

One would imagine that any proposal to frame a convention of the kind suggested would be welcome to our Allies, since a common agreement of the sort would give to each and all of them far greater scope than they could otherwise possess for the developement of aerial services.

Pioneer Work.

Several of the leading pioneers of commercial aviation are strongly convinced that the success of the development depends almost wholly on the fullest possible exploitation of the great speed capabilities of the aeroplane. Thus Mr. Holt Thomas, in his often quoted paper read before the Aeronautical Society of Great Britain, stated that the whole and only point of his case for commercial aircraft is that it can go faster and within certain limits can carry a weight faster than any other form of transport.

In the subsequent discussion Colonel O'Gorman completely agreed that speed is the fundamental basis of the whole proposition. Curiously enough, Mr. Holt Thomas, in giving a few examples of the use of commercial aeroplanes, immediately after emphasising the importance of speed, chose as a first instance to indicate the value of the aeroplane in connection with big surveys. The case is an excellent one. As he tells us, it will be worth untold money to contractors to know where not to go.

Speed.

Exceptionally high speeds will only be necessary where the aeroplane service is in direct competition with other methods of transport possessing advantages of their own which the aeroplane service does not possess. There are, however, immense possibilities of development without entering into competition with other more or less modern methods of transport at all.

Railway and roads do not exist everywhere, and where the only competition is that of animal traction, the man who is used to do a journey at anything from two to six miles an hour would be more than contented with an average of sixty miles an hour and would not hanker very much after an average of one hundred.

Take the case of a mining or agricultural centre well inland and distant from the railway in, say, Australia. If we can cut down the journey from this centre to the seaport from three or four months to three or four days, the average man would not be prepared to pay much extra for the saving of a few more hours.

He is accustomed to reckon his travelling time in weeks, and, if we could give him the speed of a good railway service at a moderate cost, he would probably prefer this to a higher speed at a higher cost. He knows that a railway is out of the question until he has developed his district into a big centre of population demanding very substantial load-carrying facilities between it and the coast. For some time to come he cannot even justify the expense of building a road.

On the other hand he wants means of developing his district and increasing its population. The provision of such means would be worth a good deal to him and the aeroplane offers him the one and only solution of his difficulty in the earlier stages.

Where to Begin.

My point is, then, that we should look for opportunities not so much where we can see our way to cut down the time taken on a journey already rapidly performed, but where we can see our way rather to creating a new transport business altogether, and at the same time developing and immensely increasing the value of land so situated that at present its value is next to nothing, simply because it lacks means of communication. If there is anything in this argument, the conclusion that one reaches is that the biggest demand for the aeroplane will spring up among people whose main and ultimate object is the development of new districts hitherto inaccessible.

We know what in effect the building of a railway may have upon the value of the land. We now have the opportunity of producing the same effect at an infinitely lower first cost. We can start in a small way and in a remote position and induce people to take up our land by offering them the attraction of what corresponds in speed to first-class railway communication with large centres at considerable distances.

The case is parallel—though on a much bigger scale—to that of the motor lorry when used for the carriage of fruit and vegetables. The existence of the motor lorry enables the fruit grower to take up land at a comparatively cheap rate because it is so far from the market town as to make transport of produce by horsed vehicles too slow and expensive a job. What he has to do is to add the cost of operating his lorry to the cost of his land, and if he comes to the conclusion that the extra mileage run will involve a smaller cost than the extra rent payable near the town, he is perfectly justified in going farther out. Even so, his limit may be twenty or thirty miles.

In many instances the aeroplane may increase this limit to several hundred miles. During the process of development it would have to serve for the carriage of portable goods as well as passengers. As a rule, the carriage of goods would have to be performed at the lowest possible rate, and this is not consistent with the highest possible speed. One does not, of course, contemplate the marketing of agricultural produce by aeroplane at a point a thousand miles distant. The newly developing district must be more or less self-supporting, but there is all the difference between being cut off from the world altogether and having available a method of transport which can be utilised by passengers and also in emergency for fairly portable goods of high value.

All this applies equally to the carriage of mails. It is only in somewhat exceptional cases that there is serious ground for complaint in the rate at which mails are conveyed between large centres at a moderate distance apart. One of the main disadvantages of the small and remote centre is the slowness of the mail service due to the lack of railways and roads. In such cases the trifling irregularity of the aeroplane service resulting from fogs or gales would be a minor inconvenience. Great speed would not be an urgent necessity.

A Few Axioms.

Altogether I suggest that we are in danger of making too much of our undeniable speed capabilities.

Speed is not everything.

The whole of the transatlantic passenger business in normal times does not go to the fastest liner.

The desirability of saving time is only determined by comparing the value of the time saved with the cost of saving it.

We must avoid the error of looking at the aeroplane simply as a conveyance for the man whose time is of great value and who will save time at all costs.

If developments are to be big, as they will be, it must be because aeroplane services will be used by people of moderate means, who will not pay a double fare for the sake of arriving a few hours earlier at a distance destination.

The power of exceptional speed is an important asset, but the power of travelling over trackless country at a speed which compares well with that which is obtainable where tracks are laid, is an even more important one which we must never forget in working out our general scheme of aerial communications and watching for desirable extensions of that scheme in all parts of the globe.



ARE YOU A SUBSCRIBER ?

THE Directors of The Aircraft Supplies Company, Limited, regret that, owing to the shortage of paper, it has become necessary to curtail, as much as possible, any increase in the circulation of "Aircraft Supplies," the "Ascol" House Fortnightly Stock List and House Journal. In order to enable those persons who require "Aircraft Supplies" for their everyday business to receive the Journal regularly, it has been decided to issue copies to subscribers only, **on and after July 30th. The Subscription Rate for single copies is 10/- per annum, post free.** Firms engaged in the Aircraft Industry may order "Aircraft Supplies" to be sent them regularly, the subscription, in advance, to be invoiced as usual.

We take this opportunity of informing our many customers and friends that the levying of this subscription is made entirely to meet the difficulties outlined above and that there is no intention whatsoever to allow any profit to accrue to the Company from this publication; it has, therefore, been decided to make a payment at the end of six months to the Secretary of the R.F.C. Services Fund, such payment representing the surplus funds in respect of the publication of "Aircraft Supplies," which sums will be duly announced in the Royal Aero Club Official Notices appearing in "Flight."

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SBAC — THE SOCIETY OF BRITISH AIRCRAFT CONSTRUCTORS

THE AIRCRAFT TRADER

MARKET TOPICS.

Prices are for quantities on usual terms.

July 4th, 1918.

COPPER.—The question of supplies does not give any cause for anxiety as the output of the mines is very satisfactory. It is now reported that the American War Industries Board has recently stated that there is no possibility of the official price being altered. There has been much discussion on this point, and one suggestion put forward was that there should be two prices: one for producers whose costs are 20c. or less, and one for others whose costs exceed 23½c.

A more reasonable suggestion from a very influential authority is that the mines which are producing at a high cost must close down and the labour and supplies diverted to producers who can utilise them to greater advantage. It is also pointed out that the mines which are producing at a normal cost are able to produce sufficient Copper to supply all demands.

As stated previously in these columns there is very little hope of this continued agitation meeting with success.

Official prices remain unchanged.

TIN.—The Tin position is very complex indeed and does not show any signs of improvement. There is strong feeling in America over the manner in which export licences are granted. This feeling is not confined to America, but is also prevalent amongst dealers here.

Eastern prices are again advancing and owing to the small quantity of Tin which is being exported from here buyers in U.S.A. are being compelled to buy there at a price which is now £16 above the price ruling here. There does not appear to be any possibility of the situation improving until some kind of control is put upon the Eastern sellers.

Recent reports indicate that diplomatic negotiations are being entered into between the U.S.A. Government and the other Governments, and something should be done shortly.

Comparative Prices.				
The East	£348	0	0	per ton
Here to-day, July 1st	332	0	0	per ton.
June 25th	332	0	0	per ton.
June 17th	329	0	0	per ton.
May 9th	380	0	0	per ton.

LEAD.—Supplies continue favourable and there does not now appear to be any fear of a shortage, although there is still no Lead available for domestic purposes.

Pig Lead prices remain unchanged. The official prices for manufactured Lead and Lead compounds have, however, been revised as follows:—

Sheet Lead	£41	0	0
Lead Pipe	41	10	0
Red Lead and Lethargl	45	0	0
Dry White Lead	51	0	0
White Lead in Oil	58	0	0

STEEL.—The expected huge output during the next few months has been seriously threatened by the withdrawal from all branches of the Steel industry of a very large number of young men for the Army. The men are in the majority of cases skilled and efficient and for a short time the whole output of Steel, particularly from the rolling mills, is bound to be disorganised. Furthermore the position will not be improved when the older men are called up. It is also stated that it is practically impossible to obtain boy labour as substitutes for the young men who have been recruited.

Official prices of Aircraft Steels remain unchanged.

It is still possible to obtain delivery from stock of certain sizes of Cast and High Speed Steels due primarily to large quantities of material being on hand which should have gone to Russia.

TIMBER.—There is nothing further to report at present. The situation is being watched with anxious feelings, and as far as Timber and Plywood supplies are concerned, the next few months will be very critical for Aircraft constructors.

Very little Mahogany has been received recently, and supplies are a little difficult to procure.

Official prices remain unchanged.

FABRIC.—It is becoming extremely difficult to obtain tapes and webbings, and buyers should look well ahead.

Official prices are unchanged.

"SCRAP" MACHINE TOOLS AND WOOD-WORKING MACHINES.

In the past many firms have purchased machine tools and woodworking machines as "scrap." They have, in many cases, been compelled to do this owing to the abnormal delay and multitudinous inquiries when an application is made for a new tool. Many serviceable machines have been purchased in this manner.

The Machine Tool Department, however, are determined to put a stop to this, and have sent out a notification pointing out that it is an offence under D.O.R.A. to buy or sell a machine tool or woodworking machine without the Ministry of Munitions having given permission, even if such a machine or tool is described as "scrap."

The Machine Tool Department must be notified of any machines for disposal alleged to be "scrap" and an inspection will then be made on behalf of the Ministry of Munitions, and the firm will be notified as soon as possible after an inspection has been made whether the machine tools in question have been classified as "scrap" or as "serviceable" machines.

If the machine is classified as "scrap" notification will be received from the Ferrous Scrap Department, Whitehall Place, London, S.W.1, and the machine can only be disposed of as "scrap" in accordance with the instructions received from that department.

If the machine is classified as a "serviceable" machine, a notification will be received from the Department of Engineering (Central Clearing House Section), and it will be placed on the list of second hand machines available for transfer kept by the Ministry, and notification of its ultimate disposal will be sent by the Machine Tool Department of the Ministry.

SMALL TOOL STANDARDISATION.

The British Engineering Standards Association has formed a representative sub-committee to deal with the standardisation of milling-cutters and small tools, and a conference has recently been held, at which a number of firms and associations interested were present, and representatives from the Ministry of Munitions, Small Tools Department, and Woolwich Arsenal also attended.

Colonel Crompton presided at the conference, and, after a long discussion, it was unanimously agreed that a standardisation should be undertaken. A number of Panel Committees have been nominated to study the subject in detail, as follows:—

Panel 1.—Form-relieved cutters.
Panel 2.—Non-relieved cutters.
Panel 3.—End mills.
Panel 4.—Reamers.

It was also decided that the work should be carried out by these panels at convenient centres to save the time of the members. The places selected were Birmingham, Leicester, Manchester, and Sheffield.

It is also hoped that it will be possible to arrange direct co-operation with American engineers and manufacturers through the American association of mechanical engineers. The desire for such standardisation to be formulated immediately is unanimous, and it is felt that the present unsatisfactory position can be gradually but effectually ameliorated.

A SENSIBLE HOLIDAY.

On Saturday, June 29th, the employees of Arnott and Harrison, Ltd., of Willesden, who are well known to everyone in the Aircraft Industry as producers of metal work for aeroplanes, held their annual outing, which took the form of a river trip from Richmond to Chertsey and back. The expedition was arranged by a committee of the workpeople, and everything, including the catering, was done extremely well, and the function was unmarred by any kind of hitch whatsoever.

Mr. and Mrs. Arnott and Mr. Harrison graced the expedition with their presence, and one was gratified to observe the cordial relations which obviously existed between them and their employees.

Local talent supplied music, song and dancing, and on the return trip various aeroplanes escorted the boat at what seemed to be perilously low altitudes.

The departure of the directors before the end of the trip was signalised by an ovation, and the day was terminated with a dinner ashore for charge hands and others.

One does not hesitate to say that everyone who took part thoroughly enjoyed the day, and there did not seem to be the slightest risk that anyone would regret its after-effects.

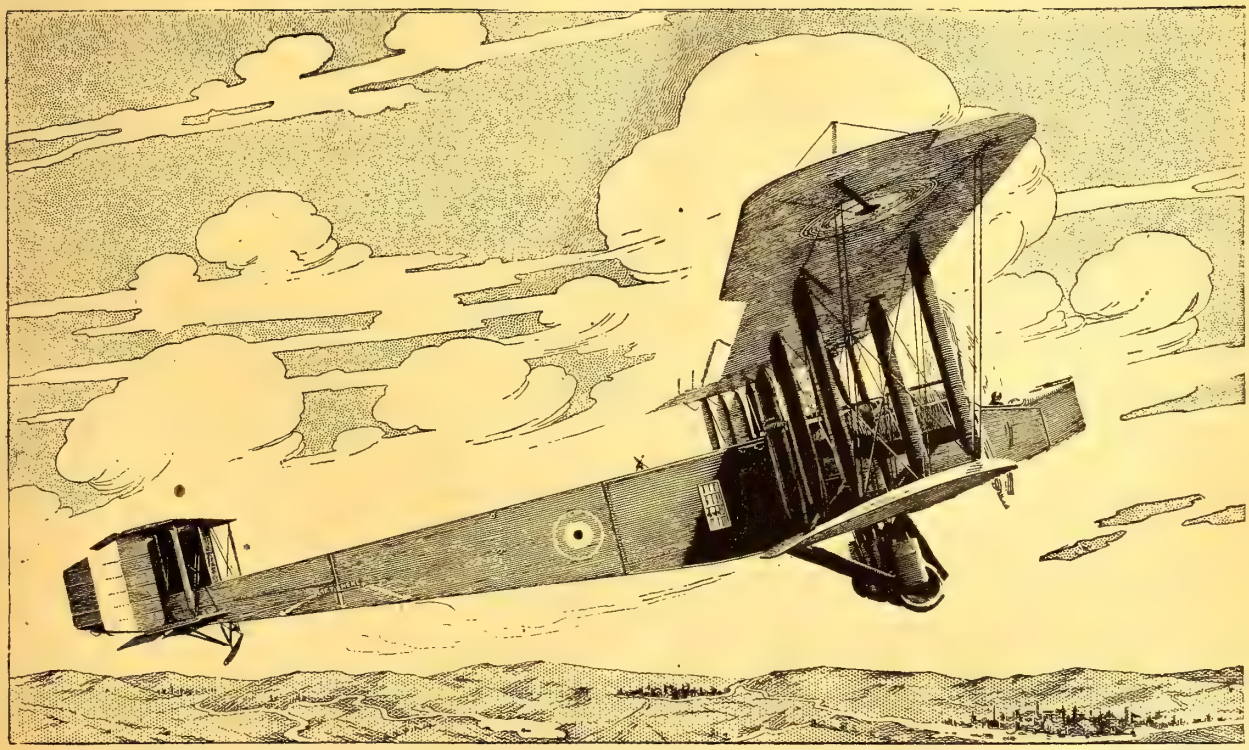
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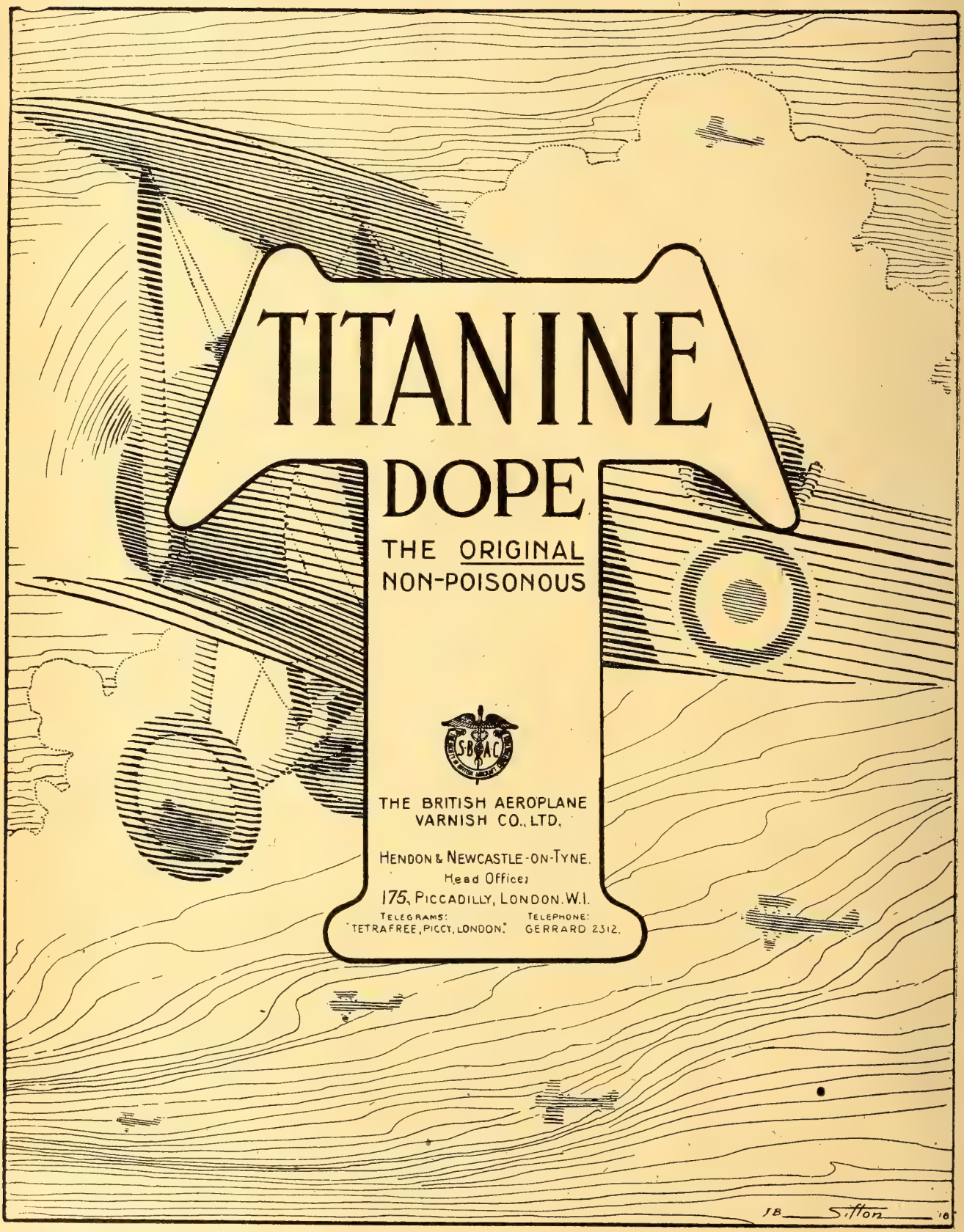
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AIRCRAFT FINANCE

CURRENT TOPICS.

In spirit the City is still as cheerful as the proverbial cricket, and, so far as the Stock Exchange is concerned there is quite a respectable volume of business. But nevertheless the House is a trifle worried, worried by the constant absorption of the man-power of the country by the Army with its probable accumulative effect on business. It is unfortunate, of course, but it cannot be helped so long as the Hun remains impervious to any reasoning save that of the gun.

New French War Financing.

By the way a lot of money is still flowing into war financing, through the medium of National War Bonds, and so long as this continues at anything like the present scale we ought to be satisfied. The quarterly revenue statements made quite an inspiriting show, which is also calculated to make the Hun fidget. In France the new monthly War Bills are said to be going satisfactorily. These are really Treasury Bills for amounts of 100 francs, 500 francs and 1,000 francs redeemable at the expiration of a month from the date originally issued.

They are sold at a discount: thus Jacques or Marie goes to the Post Office, bank or kindred establishment and pays 99 francs 70 centimes for a 100 franc note; in a month's time Jacques or Marie can claim a full 100 francs for the note. If he or she chooses to renew the bill for another month the interest for the second month is increased to 35 centimes: if it is renewed for another month a further 35 centimes is payable. And so on. The idea would not appeal to our authorities: its execution would mean trouble. All the same it is an excellent way of "raising the wind" and encouraging everyone to lend money.

Domestic Shares Quieter.

Aircraft and kindred securities have simmered down after their recent outburst, though without showing any material reaction in values. As a matter of fact the advance was too rapid: it is quite likely that before long the movement will be resumed.

As to Vickers there is still vague talk of "something good" turning up before long. One doubts, however, if any "melon cutting" can be expected for quite a long time. Armstrong Whitworth are a distinctly good market, and as a consequence of the recent excellent profit statement Rolls-Royce shares are eagerly absorbed whenever there is a selling about. Triumphs are being carefully watched for and it is known that profits are being made on a grand scale.

A Regrettable Delay.

In the interest of the Aircraft Industry one asks once more: Why is it that there is still no market in the shares of the Whitehead Aircraft Co.? Not one, not two, but a large number of brokers are being asked the question by their clients. It is only natural that when an investor subscribes for shares on the strength of a published appeal for capital he likes to know that there is a real market, not necessarily in the London Stock Exchange, for his securities.

Limelight of Public Dealings.

There is no market in Whiteheads, and so the holder is in a quandary. He may not want to sell them; indeed, he may desire to increase his holdings, but the chances are he is not comfortable so long as there are no public dealings in the shares, and naturally so.

The Aircraft Industry is young: it is achieving a brilliant record during the war, but it has a future to take into consideration. Therefore, it is essential that it provides no scope for adverse criticism.

The shares of aircraft companies, like those of any other public company, ought to be in the limelight of publicity, and the only proper limelight is provided by a free market in the Stock Exchange.

Smaller Gnome Profits.

There is something very interesting and instructive about the past year's results of that important French undertaking, the Gnôme and Rhône Motor Co. The profits have sensibly diminished, being, as foreshadowed a few weeks ago, 7,686,514 francs, compared with over 14 million francs. With the 331,301 francs brought in, the company can pay a dividend of 300 francs per share, add 3,000,000 francs to the amortisation reserve, making it 8,300,000 francs, and carry-forward, 261,544 francs.

Reason of the Shrinkage

This diminished profit resulted in spite of a considerably augmented output: and it is to be ascribed to the increased cost of all materials and a general advance in wages, etc., coinciding with a constantly lower selling price to the Government, which, apparently, absorbs all the output. This shrinkage in the margin between the net cost of production and the price charged to the Government is bad enough, but it is further explained that nowadays the type of engines is changing very rapidly—much more rapidly, of course, than in normal times—and this, of course, had added to the expenses.

Foreign Businesses.

It is stated that the results obtained from foreign licences has been more than doubled. Incidentally, the company has a considerable stake in Russia, and the works there have been seriously affected by the revolution. This is the more unfortunate, because, at the instigation of the Russian and Home Governments, the workshops, plant and productive capacity were considerably augmented. It has now proved futile to attempt to develop the Russian auxiliary, which, for the time being, must be considered as a loss. The workmen hold complete control. At home, the company has recently acquired a considerable interest in an engineering concern.

Triplex Dividend.

The Triplex Safety Glass Co. announces an interim dividend of 5 per cent., in comparison with 4 per cent. a year ago. There has been business in the shares at 25s. 6d. to 25s. 9d. For the whole of 1917 the dividend was 10 per cent., and it looks like being increased.

Aluminium Corporation Dividend.

The muddle of the Excess Profit Duty is becoming worse. One notes that the Aluminium Corporation is not in a position to submit the usual accounts for last year because of the absence of a final settlement with the Authorities in respect of liability for this particular tax. It is interesting to note, however, that the trading results justify the directors in recommending the payment of a year's preference dividend at the rate of 7 per cent.

A Steadily Improving Position.

A complete change in the position of this concern has taken place within the past few years. At the end of 1911, there was a debit balance of £9,988 which was reduced to £7,679 in 1912, and then converted into a credit balance of £119 in 1913. In 1914 there was a credit of £3,286 and for 1915 and 1916 the preference shares received 7 per cent. dividends. At the end of 1916 a credit balance of £35,778 was carried forward, inclusive of £4,559 brought down, and it is believed that last year's results will prove equally as good, if not a little better.

British Industrial Federation.

Lack of cohesion has been a serious fault with British industry in the past; the Germans knew it, and profited thereby. Now we are promised a change, for that is the object of the Federation of British Industries which, if worked on business lines, ought to be successful. Probably the Aircraft Industry, being so youthful, needs cohesion more than some of the older trades. Already it is stated to have obtained a membership of 124 associations (constituting a very large majority of the effective associations in the country) and 691 firms, representing in all a total of over 9,000 firms in every trade and industry. Its object is to improve the general organisation of British industry by providing a means by which the various trades can discuss matters of common interest, can form joint decisions as the result of such discussion, and can take joint action when required in support of such decisions.

Its Programme.

(1) The promotion, encouragement, and, where necessary, the formation of effective and fully representative associations in each trade for discussing and dealing with the affairs of that trade.

(2) The collection of these associations and their leading members in a central federation for discussing and dealing with matters of common interest to all trades, and for mutual support.

(3) The organisation of this central federation in such a manner that each industry or trade shall be able to express its views through a representative and self-selected channel, and shall be accorded a voice proportionate to its size and importance in

relation to other industries in the discussion and decision of those questions of common interest which alone are dealt with by the central federation.

(4) The provision of such direct assistance in the promotion and development of British trade as can be given more effectively by a central federation representative of all trades than by the independent action of the associations of different trades.

COMPANY ANNOUNCEMENTS.

NEW COMPANIES REGISTERED.

The files of the following new companies are available for inspection at Somerset House.

Aircraft Press, Ltd.—Private Company. Registered June 27th. Capital £2,500 in 10s. shares. To acquire the publication known as "Aircraft." The subscribers (each with one share) are:—S. S. Hann, 161, Church Lane, Old Charlton, S.E.7, advertising manager; H. J. Stephens, 69, Bishopsgate, E.C., editor. Governing director for life: H. J. Stephens. Registered office: 69, Bishopsgate, E.C.

Cellon (Midlands), Ltd.—Private company. Registered July 1st. Capital, £50,000 in £1 shares (10,000 7½ per cent. participating cumulative preference). To acquire part of the business carried on by Thomas Tyrer and Co., Ltd., at Stratford, E., and at Cellon Works, elsewhere, as manufacturers of aeroplane dope and varnishes for Cellon, Ltd., and part of the business of Cellon, Ltd., relating to the sale of the dope and varnishes so manufactured. The subscribers (each with one share) are:—A. J. A. W. Barr, 22, Cork Street, W., aeroplane dope manufacturer; R. E. P. Grosscurth, 21, Mincing Lane, E.C., bismuth merchant. The first directors are:—A. J. A. W. Barr and R. E. P. Grosscurth and P. H. Chambers. Registered offices: 22, Cork Street. W.1.

Safety Glass Co., Ltd.—Private company. Registered June 28th. Capital, £5,200 in £1 shares. Objects as indicated by the title. The subscribers (each with one share) are:—J. W. H. Dew, Sunnymede, Eaton Road, Datchet, Bucks, engineer; E. H. Bell, 49, Etheldene Avenue, Muswell Hill, N., engineer. Permanent directors: J. W. H. Dew and E. H. Bell. Registered office: 8, Laurence Pountney Hill, E.C.

Synthlacs, Ltd.—Private company. Registered July 2nd. Capital £20,000 in 17,000 pref. shares of £1 each, and 60,000 founders' shares of 1s. each. To take over from Bindley, Wellen and Dulcken the benefit of certain patents and to carry on the business of manufacturers of and dealers in synthetic shellac, resin and the like, substitutes for celluloid, vulcanite, dope, and similar substances, etc. The subscribers (each with one share) are:—W. T. R. Bindley, 158, Worple Road, S.W.19, industrial chemist; A. W. Wellen, Eastcote House, Eastcote, Middlesex, industrial chemist; and A. D. Dulcken, 30, Mincing Lane, E.C.3, shellac merchant. The first directors are:—W. T. R. Bindley, A. W. Wellen, and A. D. Dulcken (all permanent). Solicitors: Walter Martin and Co., 322, Queen Victoria Street, E.C.

A DESERVED CELEBRATION.

Those who work hard deserve to play occasionally, and certainly few workers have deserved their play better than those of the works known postally as Vickers, Ltd., Weybridge, though, as a matter of fact, they are not at all Weybridge geographically. Last Saturday these energetic people celebrated the turning out from their works of the thousandth aeroplane of a certain type in an incredibly short period by holding a sports meeting of a particularly enjoyable kind. Prior to the sports the directors entertained the heads of departments and a few friends to lunch, and this gathering was distinguished by the presence of a number of officers of the production side of the Air Ministry who in the course of their duties come in contact with the firm's work.

After lunch Sir Trever Dawson, Chairman of Vickers, Ltd., after giving the usual loyal toasts and referring to the Silver Wedding of the King and Queen, proposed the health of the Air Ministry, and bore witness to the help which the firm had received from everybody of all ranks, and so had been enabled to put up the excellent record which they were now celebrating. He also recognised the loyalty and industry of the Works' staff and employees, who, under the management of Mr. Muller, assisted by Messrs. Knight and Dunbar, had achieved results of which they had every right to be proud.

In replying, Brig.Gen. Alexander, Controller of Aircraft Supplies, said that when he came into the aircraft supplies branch he found Vickers, Ltd., were making all classes of war material, but not enough aeroplanes, from his point of view. He therefore made out a programme of what his Department expected from the firm. Gen. Alexander then quoted the figures of that programme for the past six months, and showed that though the desired number of machines was increased month by month, the output kept steadily ahead of the desired figure, generally by over 10 per cent. and sometimes by 20 per cent. He argued that such results showed enthusiasm and efficiency on the part of the workers. The Air Ministry thoroughly appreciated such results, and had therefore entrusted the firm with the output of other new designs, for the Ministry expected the same progress to be made with the new types.

The figures for the engines made at other Vickers' works were as satisfactory as those for aeroplanes. He felt that the Ministry was doing the right thing in entrusting output to Vickers, Ltd., and he was sure they would do their utmost to give the Services all they wanted with which to beat the Hun.

Mr. Joynson-Hicks, M.P., recalled the fact that for the past five or six years he had been keenly interested in aerial affairs, and said that he was convinced that in the air we should ultimately win complete victory. When he was in France last June he saw then the excellent results achieved, and he said that though they might be supplying the Army's actual demand the Army was modest, and if asked for all the machines which it would like with which to clear the Bosche out of the air it would ask for still more. There was no reason why we should not win the war in the air this year. If we could not get through a trench we could always go over it.

Commander Bartley, R.N.V.R., proposed the toast of Vickers, Ltd., in a few well-chosen words.

Major H. F. Wood, manager of the Aviation Department of Vickers, Ltd., said how glad they all were to be able to support the Ministry by their work. Production in these days was none too easy, for there were so many types of armament required that it was difficult to get material. Without the cordial support of the Supply Department one could not produce. Whenever they wanted material they always found that the necessary grease was put in the wheels by the Department.

As regards certain recent orders given out for new types, he would like to congratulate the Supply Department on having taken a justifiable gamble. It was a strong policy and a right policy, and it would put us on top a year ahead of the enemy. His own firm would always do its level best to keep up output at its present satisfactory level.

The sports meeting itself was in every way a success, the events being run well up to time-table, without a dull moment intervening. The Vickers Crayford Band played during the afternoon, and showed that it is composed of musicians, as distinct from instrumentalists. "The Khaki Quartette," organised by Col. Bouverie, one of the directors of Vickers, Ltd., gave a really clever and artistic concert performance, which was highly appreciated. At the end of the sports the prizes were presented by the Hon. Mrs. Bouverie, who afterwards made a short but inspiring speech to the workers, who received it with enthusiasm.

Vickers, Ltd., deserve all praise not only for the highly efficient organisation of these works, but for the amicable spirit which exists between the workers and the management. The pioneers of aviation will be glad to hear that this happy state of affairs is very largely due to two of their old friends, Mr. Muller, who will best be remembered as being concerned with the building of the famous "Oozeley Bird" biplane belonging to Mr. Percival, and Mr. Knight, one of the earliest Bristol pilots. It certainly does one good to see those who went through the bad days of aviation thus coming into their own. Maj. Wood's judgment in entrusting such important work to them is evidently more than justified.

CURRENT SHARE QUOTATIONS.

July 9th, 1918.

Aircraft Mnfg. Co.	7% cum. pref. £1 ...	22/6	23/6
	7% cum. & ptg. "B" pref., (fully paid) ...	22/6	23/6
Armstrong (Sir W. G.) Whitworth & Co., Ltd.	4% cum. pref. £5...	3 7/16	3 9/16
	5% 2nd. pref. £1 ...	17/-	18/-
	£1 ordinary	44/-	45/-
Austin Motor Co., Ltd.	7% cum. pref. £1...	17/6	18/6
	£1 ordinary	26/-	27/-
Birmingham Small Arms Co., Ltd.	£1 ordinary	71/-	72/-
	5% cum. "A" pref.	4	4⅛
	6% cum. "B" pref.	20/-	21/-
Boulton & Paul, Ltd., 5% cum. pref. £1		⅜	½
Brown Bros., Ltd., 6% cum. pref. £5...		4	4½
Darracq (A) & Co., (1905) Ltd.	£1 ordinary ...	32 -	33/-
	7% cum. pref. £1...	15/16	1 1/16
Electric Construction Co., Ltd.	7% cum. pref. £1 ...	20 6	21/6
	£1 ordinary	25/6	26/6
Fellows Magneto Co., 8% cum. partip. pref.		17/-	18/-
General Electric Co., Ltd.	6% cum. pref. £10 ...	10¾	11¼x
	£10 ordinary	24	27
Gwynnes, Ltd., 5% cum. pref.		5½	5¾
Ordinary		35/6	36/6
Greenwood & Batley, Ltd., £10 ordinary		13½	14½
Humber, Ltd., 6% cum. pref. £1		15 3	16/3
£1 ordinary		24/-	25/-
Napier (D) & Son, Ltd., 7½% cum. pf. £1		19/3	20/3
£1 ordinary		33/-	34/-
Peter Hooker, Ltd., £1 7% cum. partic. 1st pref.		18/6	19.6
Rolls Royce, Ltd., £1 ordinary		47/-	48/-
Rudge Whitworth, Ltd. £1 ordinary ...		44/-	46/-
Ruston, Proctor & Co., Ltd.	£1 ordinary	32/-	33/-
	5% cum. pref. £1 ...	17/-	18/-
Sunbeam Motor Car Co., Ltd., £1 ord. ..		3⅜	4
Straker Squire, Ltd. (1913), £1 ordinary		22/-	23/-
S. Smith & Son, Ltd. (Motor Accessories) £1 ordinary		27/-	27/6
Triplex Safety Glass, £1 ordinary... ...		25.6	26/-
Vickers, Ltd., 5% pref. stock...		80	84
5% pref. shares. £1 ...		17/6	18 6
£1 ordinary		45/6	46/-
Wm. Beardmore & Co., Ltd., 6% c. pf. £1		18 6	19.6

GENERAL INFORMATION.

Armstrong, Whitworth (1916)
Austin Motor (1916)
Rolls Royce (1917)
Rudge Whitworth (1916 & 1917
Smith (S.) & Sons (1917)
Sunbeam Motor
Thorneycroft (J. I.) & Co.
Vickers (1916 & 1917)

Owing to the difficulty of estimating liabilities under Finance and Munitions Acts, the accounts will not be ready until a later date.

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(*Continued from page 118.*)

Temp. Sec. Lt. B. D. Bate, Gen. List and R.F.C.

He carried out a photographic reconnaissance of several distant hostile aerodromes, in the course of which he encountered in all 15 hostile aeroplanes, and took part in many combats, destroying at least one of the enemy machines. He completed the whole of his reconnaissance, and returned with his machine much damaged by the enemy's fire.

Temp. Lt. R. S. S. Brown, Gen. List and R.F.C.

He bombed and wrecked a hangar in an enemy aerodrome, damaged five enemy machines which were on the ground, and scattered a party of mechanics with machine-gun fire from a height of 100ft. He then attacked three large transport wagons, and damaged them all. On another occasion he bombed a convoy of 12 limbers, destroyed some of them, and completely disorganised the personnel with machine-gun fire from a height of 20ft. He also carried out reconnaissances at a very low altitude in most difficult weather. He showed magnificent skill and determination.

Lt. (Temp. Capt.) O. C. Bryson, Yeo. and R.F.C.

He made several difficult flights in most unfavourable weather, and destroyed several hostile machines. He proved himself a determined and undaunted leader, and set a splendid example of courage on all occasions.

Temp. Sec. Lt. P. W. S. Bulman, Gen. List and R.F.C.

On five occasions, in most difficult weather conditions, he dropped bombs and fired on enemy infantry from a low altitude, inflicting heavy casualties. During these flights he frequently obtained valuable information, and twice drove off enemy machines which attempted to interfere. He showed the greatest initiative and resource.

Lt. (Temp. Capt.) J. M. Child, Manch. R. and R.F.C.

While leading a patrol he encountered four enemy scouts, one of which he destroyed. On another occasion he attacked one of two enemy two-seater machines which he encountered over the enemy's lines. He disabled the machine and skilfully turned it towards our lines, where the enemy pilot was forced to land and he and his observer were taken prisoner. On another occasion he attacked five enemy scouts, one of which he destroyed. He showed the greatest judgment and determination.

Sec. Lt. J. H. Cooper, A. and S. Highrs. and R.F.C.

He assisted to bomb an enemy aerodrome and destroyed some billets close to it. On another occasion he flew over the enemy's lines in a very thick mist and bombed some enemy transport, completely destroying one wagon and scattering the remainder with machine-gun fire. He then bombed and blew up a factory. His machine was badly hit and he returned to our lines with the greatest difficulty in very bad weather conditions. Later, in the course of three flights, he dropped bombs and fired 1,700 rounds on enemy infantry from a low altitude. He showed the greatest courage and determination.

Sec. Lt. W. E. Davis, Glouc. R. and R.F.C.

During three months' service as an observer in a night flying squadron, he has taken part in many long-distance night bomb raids, and has on all occasions shown great courage and determination, which have been a splendid example to the rest of the squadron.

Lt. (Temp. Capt.) I. A. J. Duff, Dorset R. and R.F.C.

He frequently bombed dumps, aerodromes, and railway stations, on one occasion obtaining a direct hit on an engine. He took part in many long-distance night bombing raids, always dropping his bombs from a low altitude. He showed great courage and determination.

Sec. Lt. R. L. M. Ferrie, R.F.C., Spec. Res.

He led his flight with great skill and determination in very bad weather, and dropped bombs on an enemy aerodrome from a height of 400ft., destroying one shed and badly damaging another. On two later occasions he bombed villages and attacked enemy infantry with his machine-gun from a low altitude. He has brought down two enemy machines and assisted in destroying others. He has shown great courage and resource at all times.

Air Ministry, July 5th.

R.A.F.—Staff Officer, 2nd Cl.—(S.) R. D. Waterhouse (temp. Maj. in Army), and is granted a temp. commn. as Maj., May 22nd.

Staff Officers, 2nd Cl.—And to be temp. Majs. while so empld.:—Lt. (Hon. Capt.) C. H. Keith, April 1st; Capt. G. R. Newton, May 22nd; (P.) (substituted for notification in "Gazette," July 2nd); Capt. R. S. Lindsell; Lt. (temp. Capt.) A. H. Stradling, April 1st (Q.); Lt. (Hon. Capt.) G. W. Frost, April 22nd (T.); Lt. C. Q. Steel, May 22nd.

Flying Branch.—Maj. (temp. Lt.-Col. T. W. C. Carthew, D.S.O., retains his temp. rank while empld. as Lt.-Col (A. and S.), from S.O., July 2nd.

Lt. (temp. Capt.) E. Mannock, M.C., to be temp. Maj. while empld. as Maj. (A. and S.), June 19th.

Lt. (temp. Capt.) J. A. Cochrane, M.C. to be temp. Maj while empld. as Maj. (K.B.), June 14th.

Lts. to be temp. Capts. while empld. as Capts. (A. and S.):—G. A. Hutchinson, June 10th; H. Fall, H. G. Hegarty, M.C., June 13th; F. B. Wilson, June 14th; F. W. Burdick, June 16th; W. B. Elliott, June 17th; F. M. F. West, M.C., June 19th, V. Beecroft, A. Lindley, June 20th; W. Selwyn, June 21st; D. C. M. Brooks, H. R. Gould, June 24th; J. E. Drummond, June 26th; Capt. W. Morrice to be Lt. (A. and S.) (from Admin.), June 25th; Lt. O. L. Vetter to be temp. Capt. while empld. as Capt. (K.B.), June 14th; Sec. Lt. H. R. Watterson to be temp. Lt. while empld. as Lt. (K.B.), June 16th; Lt. (temp. Capt.) J. J. Gaynor relinquishes the temp. rank of Capt. on reversion to Lt. (O.), June 29th.

Lts. (Observer Officers) to be Lts. (A and S.):—C. P. Ranger, May 13th; A. J. Tyler, May 22nd; W. M. Iles, May 27th; W. D. Rockley, May 28th; F. H. Dormer, F. T. S Menendez, M.C., May 30th; F. S. Harricks, W. B. Ferguson, M.C., H. F. Attwater, May 31st; E. Alder, June 1st; C. J. Agelasto, June 2nd; T. R. Scott, June 6th; K. F. Jones, June 8th.

The follg. Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A. and S.):—R. B. Wiggins, April 2nd; N. H. Midgley, April 6th; G. Thornton-Norris, April 8th; L. S. Potter, April 12th; G. Parsons, April 13th; K. Neighorn, April 14th; H. C. Telfer, April 17th; W. S. Lockhart, T. Stead, G. E. Lillico, A. G. McGillivray, W. E. McDermott, A. W. Shaw, H. C. Sherlock, April 19th; C. R. Berdinner, G. Hanson, H. B. Scott, April 20th; J. Ostram-Taylor, April 21st, I. H. Christie, C. G. Hoffman, T. G. Hughes, F. M. Stieber, April 22nd; J. D. Paterson, April 23rd; M. P. Morgan, April 27th; L. G. Cunningham, May 1st; M. B. Lacey, May 11th; L. E. Hammond, J. M. L. Roots, May 14th, H. H. Gardiner, T. W. B. Mill, May 17th; G. C. Upson, L. J. Cooke, J. R. Ashmore, C. S. Cope, H. S. Ellis, H. C. Lloyd, T. Hartford, J. R. Barnett, May 18th; A. V. Colville, F. W. Mulley, W. E. Catton, W. S. Winter, R. D. V. Howard, L. T. Marks, J. Jackson (date of first commn., Jan. 10th; C. Stobbs, May 19th; F. C. Pacey, D. E. Cameron, H. Cunningham, S. S. Church, H. Walmsley (date of first commn., Dec. 20th, 1917); T. D. Sykes, J. K. Reid, T. U. J. Nicholas, J. Scholes, N. E. D. Hutchinson, May 20th; A. V. W. Williams, J. G. Walton, J. S. Dixon, O. D. Horton, L. McIver, J. E. Baker, I. F. Copeland, G. P. Cilliers, W. Ferrier, S. A. Smith, H. J. Evans, T. A. Dickinson, W. C. Francis, F. Masson, May 21st; A. Gertrey, A. G. Johnston, W. R. Whettell, H. W. Clark, W. J. Baldwin, H. C. Tomkinson, May 22nd; W. J. Courtenay, V. F. Bendrodt, May 25th; A. G. S. Blake, N. A. Thomson, J. E. Emtage, L. E. Gosden, May 26th; V. C. Varcoe, J. Barker, H. V. Peeling, C. M. Keyworth, J. B. Gunn, W. E. Beckett, A. J. F. Maltby, J. H. McKenzie, May 27th; O. E. Miller, P. Hopkinson, V. G. Cheeseman, E. Barker (date of first commn. March 3rd), F. C. Duchesne, J. Cocksedge, F. M. Clark, T. D'A. Nassau, C. M. Fraser, E. T. Maitland, May 28th; H. Elliott, P. Bushell, J. Vokey, H. E. Crane, H. T. Foxton, H. Allen, J. K. Pickard, D. A. McGregor, A. W. Elliott, J. R. Woods, May 29th; C. V. Hicks, J. R. McCormack, O. Lane, R. W. F. Smee, H. F. Taylor, F. Meehan, N. Holroyde, G. Gorrill, C. N. Glidewell, J. G. Millar, A. L. Murray, E. A. Devine, S. G. Fidoe, W. F. Abbott, May 30th; L. G. Warren, J. Campbell, A. C. Richmond, R. C. Morrison, J. B. Wickham, H. S. Smith, A. Miller, H. G. H. Lowe, W. E. L. Courtney, H. A. Campbell, P. F. R. Topley, B. W. Berrington, W. R. Richardson, G. Marriott, J. A. Howard, H. G. Walsh, E. A. Bowyer, May 31st; F. Reeday, J. E. G. Robinson, M. Fearman, L. H. Walker, W. Freer, B. C. Geary, R. C. Freemantle, J. D. MacFarlane, J. A. Wrighton, J. C. Fairfax, T. W. Sleigh, A. S. Smith, J. A. L. Harris, P. Stalker, June 1st; C. C. Brouncker, R. H. Matthews, O. L. Calverley, E. E. Wilby, S. D. Connolly, L. Wilkinson, June 2nd; A. T. Reid, A. G. MacQueen, W. R. Butler, C. F. Geyton, E. J. W. Addington, W. Todd, D. R. Phillips, G. M. E. Bennett, E. F. Newman, G. W. Waddington, A. N. Ryles, H. B. Williams, F. F. Tattam, R. R. H. Bruce, June 3rd; A. W. Timson, J. Mili, R. Pyne, E. L. Edwards, S. H. Wood, A. A. Baker, G. R. Harrison, C. A. Box, C. Nash, J. D. Coates, June 4th; R. T. Grummant, G. E. Brooks, W. Berwick, W. R. Thomson, C. F. H. Thriscutt, W. Foster, A. V. Speight, R. C. Mitten, H. V. Fellowes, June 5th; H. T. J. Jagger, S. J. Hill, C. A. Robertshaw, P. I. Brown, B. Champion, J. L. Hunter, L. C. Phippen, J. N. Poole, R. B. Ronald, R. V. N. Makepeace, E. W. C. Sharpe, June 16th; R. Boosey, H. M. Matthews, T. G. Speake, L. E. Walmsley, R. G. De Little, P. E. Youngs, June 7th; A. O. Coghill, R. B. Walton, F. P. Dodsworth, H. D. Wardle, H. Preston, G. R. A. Dick, H. J. Roberts, June 8th; S. C. Henderson, H. T. Hempsall, D. P. Jones, G. W. Stubbs, A. S. Greenwood, T. J. J. Griffiths, June 9th; C. W. Cutcliffe, S. E. Crookell, H. H. Rofe, A. Thomson, date of 1st Com., Feb. 23rd; E. L. Stacey, W. R. Leach, H. G. Lomberg, H. G. Harper, June 10th; L. T. Dickson, N. S. Smith, June 11th.

The follg. are granted temp. commns. as Sec. Lts. (A. and S.):—G. E. Wright (temp. Sec. Lt., A.S.C.), April 22nd; A. H. Gitsham (temp. Sec. Lt. R. Lancs. R.), May 6th; O. W. D. Sutherland (Lt., Quebec R.C., E.F.), and to be Hon. Lt., May 12th; R. R. Spencer (temp. Sec. Lt., attd. Middx. R.), T. E. Smith (temp. Sec. Lt., attd. Worc. R.), W. T. Cole (temp. Sec. Lt., attd. Dorset R.), H. S. Richards (temp. Sec. Lt., Essex R.), May 19th; G. A. Pearson (temp. Sec. Lt., attd. Arg. and Suthd. Highrs., May 20th; G. E. Haworth (Capt., Ches. R., T.F.), and to be Hon. Capt. A. C. Holmes (Sec. Lt., Newfoundland R.), May 21st; R. H. Schroder (Lt., Brit. Col., R.C.E.F.), and to be Hon. Lt., May 25th; S. Burnett (Lt., Bedf. R., T.F.), and to be Hon. Lt., May 27th; M. Brophy (temp. Sec. Lt., attd. N. Lan. R.), May 28th; S. G. Harman (Lt., Welsh R.), and to be Hon. Lt., A. S. Fraser (Capt., Dorset R.), and to be Hon. Capt., G. Rogers (Sec. Lt., Worc. R., T.F.), J. J. Haslett (temp. Sec. Lt., attd. R. Berks R.), A. McK. Matheson, Sec. Lt., R.F.A.), H. V. Geary, M.C. (Sec. Lt., A.S.C.), J. E. P. Adam (Lt., R.M.), and to be Hon. Lt., May 20th; G. Boyce (temp. Lt., York R.), and to be Hon. Lt., G. E. Wales (Sec. Lt., Notts and Derby R.), R. D. King (temp. Lt., R. Fus.), and to be Hon. Lt., J. A. Wright (temp. Sec. Lt., E. Kent R.), A. Metcalf (temp. Sec. Lt., Glouc. R.), J. Duncanson (Sec. Lt., Can. M.G.C.), C. A. S. Booth (Lt., N. Staff R., Spec. Res.), and to be Hon. Lt.; N. W. G. Wilkinson (Sec. Lt., Manch. R., T.F.), May 30th; N. V. Scott (temp. Sec. Lt., attd. Welsh R.); A. E. Overton (Lt., Essex Yeo., T.F.), and to be Hon. Lt.; N. Wardlaw (temp. Sec. Lt., attd. Rif. Brig.), May 31st; C. Hansen (temp. Sec. Lt., attd. K.R. Rif. C.), June 1st; T. C. Sutcliffe (Sec. Lt., Lond. R., T.F.); W. Fitton, M.M. (temp. Sec. Lt., Lan. Fus.); R. W. O. Thurburn (Lt. Sco. Rif., Spec. Res.), and to be Hon. Lt.; R. S. Maitland-Edwards (Sec. Lt., C. Gds., Spec. Res.), June 2nd; V. J. Weber (Sec. Lt., Bord. R., Spec. Res.); T. P. Elder, M.M. (Lt., Br. Columbia R., C.E.F.), and to be Hon. Lt.; D. Wilson (Sec. Lt., S. Lan. R., T.F.), June 3rd; W. H. Naylor (temp. Sec. Lt., Rif. Brig.); J. Silvester (Sec. Lt., R. Berks R.); J. I. T. Harrison (temp. Lt., Lan. Fus.), and to be Hon. Lt.; S. I. Thomas (Sec. Lt., R.W. Fus.), June 5th; S. Hall (temp. Sec. Lt., Manch. R.); J. McNamara, D.C.M. (Sec. Lt., York and Lancs. R., Spec. Res.), June 6th; S. B. L. Hall (Sec. Lt., W. Rid. R.); E. J. Moule (temp. Sec. Lt., attd. Worc. R.); H. T. Eyres (Sec. Lt., R.W. Surr. R.), June 8th; C. W. Murray (Lt., R. Glasgow Yeo., T.F.), and to be Hon. Lt.; G. F. Davies (Lt., Can. F.A., C.E.F.), and to be Hon. Lt., June 9th; M. G. Hill (Sec. Lt., Lond. R., T.F.); S. Dumbell (Lt., L'pool R., T.F.), and to be Hon. Lt.; E. Wood (temp. Sec. Lt., S. Lan. R.); C. B. O. Walker (temp. Lt., Shrops. L.I.), and to be Hon. Lt., June 10th; W. D. Evans (Lt., Sask. R., C.E.F.), and to be Hon. Lt.; W. P. Pakenham-Walsh (Lt., R.F.A., Spec. Res.), and to be Hon. Lt., June 11th.

The follg. Sec. Lts., late Spec. Res., R.F.C., on prob., are confirmed in their rank as Sec. Lt., A.V.S.:—S. R. Austin, May 29th; F. S. Gordon, June 5th; Sec. Lt. R. Johnston, from Tech., to be Sec. Lt., A. and S., May 15th.

The follg. Cadets are granted temp. commns as Spec. Lt. (A. and S.):—H. A. Argles, W. L. Attridge, R. M. Atwater, R. H. Balfour, A. W. L. Beauchamp, B. F. Bunker, F. Corbin, H. C. Cramer, L. L. De Jean, D. F. Dempster, H. S. Dyson, A. E. Eastes, J. Freeman, L. D. Farmer, C. Guild, G. B. Gardiner, I. W. Hathaway, A. G. Hamilton, G. C. Hyatt, E. Jones, F. E. King, P. A. Kingsland, J. D. H. Lewis, L. W. Marwick, R. Maranda, A. B. D. McConnell, C. O. Morrison, W. F. Noble, G. C. Noble, H. J. Philip, F. B. A. Punnett, A. W. Rowe, W. V. Ryan, G. V. Snell, T. H. Shield, P. M. Tidmarsh, G. J. C. Tigar, R. G. Trenholme, H. H. Thompson, P. MacL., Wallace, J. H. Jones, J. A. Mondor, May 16th; G. H. Knight, May 28th; B. T. Rampling, May 29th; L. G. Denniss, June 4th; B. F. Ross, E. E. Carpenter, June 10th; J. S. G. Holmes, June 11th; H. D. Butler, R. D. Brownlie, June 12th; S. F. B. Lea, W. England, June 14th.

The follg. Prob. Flight Offrs. (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (A. and S.):—H. R. Dodd, P. S. Primrose, H. J. Heaton, May 15th; J. L. Warmington, A. H. Thomas, F. Kirk, P. E. Richardson, H. J. Collar, R. F. Sanders, June 14th; G. Prickett, W. W. Meddings, W. B. H. Shaw, W. D. Sambrook, June 19th; A. L. Mawer, W. S. T. Le May, L. Edwards, J. Marsden, C. E. Sherlock, June 21st.

The follg. Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lt (Dir.):—A. E. White, J. H. L. Kerby, June 19th.



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C.D.C

The follg. Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (K.B.) :—H. W. Coverley, J. H. Peters, J. M. Dickinson, G. R. Gibbons, H. N. Davis, R. W. Paulger, June 24th.

The follg. Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (K.B.) :—A. Macdonald, L. H. Peach, June 24th.

D. S. Anderson (Prob. Flt. Officer, late R.N.A.S.) is granted a temp. commn. as Sec. Lt. (K.B.), May 11th.

The follg. are granted temp. commns. as Sec. Lts. (K.B.) :—H. J. Sier (Sec. Lt., R.F.A., Spec. Res.), June 4th; E. Nordberg (temp. Lt., A.S.C.) and to be Hon. Lt., June 21st; O. H. Adams, M.C. (Sec. Lt., R.G.A., Spec. Res.), June 22nd; A. Farthing, Lt., A. and S., to be Lt., Obsr. Officer, June 22nd.

The follg. Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (Obsr. Officers) :—J. Watson, June 11th; E. Singleton, J. Levy, June 16th; G. P. Colin, G. B. Nicholas, G. Harrison, June 17th; P. E. L. Foot, S. E. Rowley, June 18th; A. J. Viveash, C. W. Phillips, C. E. A. Lovell, G. E. Mann, June 19th; J. H. Jacques, A. Macinnes, R. H. Kemp, S. H. Smith, June 20th; R. W. Davidson, June 21st; M. A. Mackenzie, K. Penrose, R. Milne, C. W. C. Peene, June 22nd.

The follg. are granted temp. commns. as Sec. Lt. (Obsr. Officers :—W. W. L. Jenkin (Lt., D. of Corn. L.I.), and to be Hon. Lt., June 16th; E. C. Harris (temp. Sec. Lt., K.R.R.C.), June 17th; F. W. P. Clark (temp. Sec. Lt., attd. Oxf. and Bucks L.I.), W. T. C. Blake (Sec. Lt., Glouc. R., Spec. Res.), E. M. Heron (Sec. Lt., Lond. Yeo., T.F.), J. C. Montgomery (temp. Lt., Trg. Res. Bn.), and to be Hon. Lt., E. F. Stephenson (Sec. Lt., R.G.A., Spec. Res.), P. K. Chapman (temp. Sec. Lt., Suff. R.), T. A. Nutcombe (temp. Sec. Lt., E. Lan. R.), June 19th; C. G. Ashton (Sec. Lt., W. Rid. R., T.F.), J. Fenwick (Lt., Cam'n Highrs., T.F.), and to be Hon. Lt. C. J. Ralph (Sec. Lt., New Armies, Gen. List), June 20th; E. Shamper (Lt., Quebec R., C.E.F.), and to be Hon. Lt., W. Taylor (Lt., Gord. Highrs., T.F.), and to be Hon. Lt., June 21st; F. J. Jackson (Sec. Lt., Lond. R., T.F.), B. H. Curry (temp. Lt., R.F.A.), and to be Hon. Lt., A. J. Baxter (Sec. Lt., Linc. R., T.F.), G. G. Cooper (temp. Sec. Lt., Suff. R.), E. W. Bell (temp. Sec. Lt., Northd. Fus.), W. Wallace (Sec. Lt., R. W. Surr. R.), W. A. Carruthers (Capt., Manitoba R., C.E.F.), and to be Hon. Capt., W. A. John (Lt., Sussex Yeo., T.F.), and to be Hon. Lt., W. L. Binnie (Lt., R. Scots, T.F.), and to be Hon Lt., G. V Learmond (temp. Sec. Lt., High. L.I.), June 22nd.

The follg. Proby. Obsr. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—W. A. Spranklin, F. J. Sutherland, L. T. Kerry, F. W. Elliott, A. E. E. Lee, G. P. Smith, H. M. Green, F. O. Bovill, J. G. Harvie, H. C. B. Freeman, V. M. Daniels, S. A. Banton, L. W. Aiken, R. C. Collinswood, June 24th.

The follg. Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—G. K. Carruthers, F. J. Paget, May 18th; W. F. Keepin, G. L. Kaye, June 27th; L. M. Stubley, D. P. Ogilvy, J. Houldgreaves, P. V. Kilby, F. Powell, M. St. J. Ross, June 29th.

The follg. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—J. Ankers, L. H. F. Bird, E. R. Bull, W. T. Rutledge, June 20th; M. E. Brown, C. H. Wheeler, W. A. Armstrong, J. B. Whitehouse, R. N. Smith, P. T. Somerville, R. L. Williams, W. Grayson, P. Payne, D. C. Hay, G N. G. Hamilton, S. J. Bailey, June 29th.

The name of Sec. Lt. John Kelly (Obsr. Officer) is as now described, and not as on "Gazette," June 18th

The notification in "Gazette," June 25th, regarding Flt. Cadet T. J. Leighs, is cancelled.

Lt. V. C. Gordon relinquishes his commn. on account of ill-health and is granted the hon. rank of Lt., July 6th.

Lt. G. M. Murray relinquishes his commn. on account of ill-health, contracted on active service, and is granted the hon. rank of Lt., July 6th.

Sec. Lt. W. Gardner relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., July 6th.

Administrative Branch.—Lt. J. R. Frankish to be temp. Capt. while empld. as Capt., June 20th.

Sec. Lt. A. W. Poat to be temp Lt. while empld. as Lt., June 20th.

Lts. (O.) to be Lts. :—A. F. Britton, M.C., June 4th; J. Dudley, June 13th.

Lt. A. G. Baker to be Lt. (from A. and S.), July 5th.

F. A. Payne is granted a temp. commn. as Lt., July 1st.

The following are granted temp. commns. as Sec. Lts. :—R. E. Pudney, July 7th; J. H. Edgelow, H. G. Middleton, and to be Hon Lt., July 1st; S. H. Adams, E. G. Burden, N. W. Chandler, E. L. Hopkins, July 5th.

Sec. Lt. J. Pell, M.C. (from Technical) to be Sec. Lt., May 17th.

Lt. T. R. Whitehead relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lt., July 6th.

Sec. Lt. C. G. Causton relinquishes his commn on account of ill-health, and is granted the hon. rank of Sec. Lt., July 6th.

Sec. Lt. N. S. Roupell relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Sec. Lt., July 6th.

Sec. Lt. G. Dolley relinquishes his commn., and is granted the hon. rank of Sec. Lt., July 6th.

The follg. Sec. Lts. resign their commns., and are granted the hon. rank of Sec. Lts. :—H. Bayer, H. N. Dorling, July 6th.

Technical Branch.—F. N. Newell-Roberts (A./Lt., R.N.V.R.) is granted a temp. commn. as Capt., April 1st. (Substituted or notification in "Gazette," June 4th.)

The follg. Lts. (temp. Capts.) retain their temp. rank while empld. as Capts. (from A. and S.) :—W. E. L. Seward, M.C., April 25th; A. Lang, June 25th.

Lt. D. E. Barnett to be temp. Capt. while empld. as Capt., June 26th.

Capt. A. H. Binyon to be Capt. (from Admin.), June 22nd.

Sec. Lt. P. L. Lindup to be temp. Lt. while empld. as Lt., May 23rd.

Flt. Cdt. R. E. Lane is granted a temp. commn. as Sec. Lt., April 1st.

H. S. Fielding (late Sec. Lt., R.F.C., on prob.) is granted a temp. commn. as Sec. Lt., May 27th.

The follg. relinquish their commns. on ceasing to be empld. :—Lt. (temp. Capt.) A. L. Howarth, April 21st; Sec. Lt. (Hon. Capt.) A. H. Woodhead (Capt., Ches. R.), May 26th.

Medical Branch.—The follg. Fleet Surgns., R.N., are granted temp. commns. as Lt.-Cols. :—R. H. Mornement, W. H. Pope, N. J. Roche, J. St. J. Murphy, June 22nd.

H. Cooper, D.S.O. (Staff Surgn., R.N.), is granted a temp. commn. as Lt.-Col., June 22nd.

A. E. Henton is granted a temp. commn. as Capt., July 5th.

Memoranda.—Maj. (temp. Lt.-Col.) R. K. Bagnall-Wild to be temp. Brig.-Gen., July 6th.

Maj. H. C. Ellis is granted the temp. rank of Col. while holding the appt. of Gen. Servs. Pay Officer, June 17th.

Capt. (temp. Maj.) S. H. B. Harris to be Lt.-Col. while spec. empld., June 26th.

The follg. relinquish their commns. on ceasing to be empld. :—Maj. A. P. Frankland, D.S.O. (Res. of Officers), June 5th; Sec Lt J. S. R. Morgan, June 13th; Sec. Lt. W. Coltman, June 19th.

War Office, July 6th.

Regular Forces.—Establishments.—R.F.C.—Mil. Wing.—Flying Officer.—Temp. Sec. Lt. (on prob.) W. J. Washer, Gen. List, and to be confirmed in his rank, Oct. 31st, 1917.

* * *

The following Officer has been brought to the notice of the Secretary of State for War for valuable services rendered in connection with the War :—

Ashmore, Lt.-Col. and Bt. Col. (temp. Maj.-Gen.) E. B., C.M.G., M.V.O., R.A.

War Office, July 9th.

Regular Forces.—Establishments.—R.F.C.—Mil. Wing.—Gen. List.—W. B. Middleton to be temp. Sec. Lt. (on prob.), March 30th.

FROM THE COURT CIRCULAR.

Buckingham Palace, July 3rd.

The King held an Investiture in the Quadrangle of the Palace this morning.

The following was introduced into the presence of the King, when His Majesty invested him with the Insignia of the Distinguished Service Order.

Lt.-Col. Vincent Nicholl, R.A.F. (late Squadron-Commander, R.N.A.S.).

The King then conferred the following decoration :—

The Military Cross.

Capt. Ian McDouald, R.A.F.

OFFICIAL COMMUNIQUES.

NAVAL.

Admiralty Communiqué.

July 7th.—The usual anti-submarine, hostile aircraft, and escort patrols have been maintained.

One enemy seaplane was destroyed and three indecisive combats took place.

About 15½ tons of bombs were dropped, a big fire being started at Bruges, also at Varssenaere aerodrome, north and south of Fort Lanin. Bursts were observed among the sheds, hangars, and warehouses, and on Maria Aelter aerodrome.

MILITARY.

G.H.Q. Communiqués.

July 2nd, 8.8 p.m.—On the 1st inst. our aeroplanes were very active, fine weather enabling much work to be done in co-operation with the artillery, as well as reconnaissance and photography.

Twenty-five German machines and three German balloons were destroyed during the day, and 15 other hostile aeroplanes were driven down out of control. In addition two large hostile night-flying machines landed behind our line, the occupants being taken prisoner.

Eight of our machines are missing.

Twenty-two tons of bombs were dropped during the day, and 13 tons during the night.

All our night-flying machines returned safely.

July 3rd, 7.43 p.m.—The weather on July 2nd was fine but hazy.

Our machines carried out reconnaissances, artillery, and photographic work as usual, but there was less enemy activity.

Thirteen German aeroplanes were destroyed and nine others were driven down out of control. One German balloon was shot down.

Four of our machines are missing.

Nineteen tons of bombs were dropped in the course of the day and the following night on enemy railways, dumps, and billets.

July 4th, 7.42 p.m.—On July 3rd weather was cloudy, and enemy activity was slight.

Our machines carried out a number of reconnaissances, and observed, as usual, for the artillery.

Six hostile machines were destroyed, and four others driven down out of control.

During the day and the following night we dropped 16 tons of bombs, the railway junctions at Lille and Courtrai being the principal targets.

All our machines returned safely.

July 5th, 8.45 p.m.—Our aeroplanes co-operated in the successful attack of July 4th south of the Somme, both by heavily bombing the German positions throughout the previous night, and by machine-gun fire and bombing from a low altitude on enemy troops and transport during the actual operation.

On other parts of the front reconnaissances and artillery co-operation were carried out.

Eleven German machines were destroyed, and 10 were driven down out of control. One hostile balloon was shot down in flames.

Four of our machines engaged in the battle area are missing.

All machines on other parts of the front returned safely.

Thirty-three and a-half tons of bombs were dropped during the day of the 4th inst. and night of July 4th-5th

July 6th, 8.10 p.m.—There was little fighting in the air on July 5th. Two German machines were destroyed, and one was driven down out of control.

One of our machines is missing.

Our aeroplanes and balloons carried out a large amount of successful artillery work.

Nineteen tons of bombs were dropped on selected targets during the day and the following night.

July 7th, 7.40 p.m.—Our balloons and observation machines carried out much valuable work on the 6th inst.

There were few combats in the air. Three German aeroplanes were destroyed, and one was driven down out of control.

One of our machines is missing.

Seventeen tons of bombs have been dropped on various targets during the last 24 hours.

July 8th.—Hazy weather interfered with work in the air on July 7th, and observation was difficult. Seven enemy aeroplanes were destroyed during the day, and four driven down out of control.

Three of our machines are missing.

We dropped 16 tons of bombs during the day and the following night, the principal targets attacked being Ostend docks and the railways at Tournai and Courtrai.

War Office Communiqués.

July 4th.—The G.O.C. British Forces in Italy reports :—

The Royal Air Force scored some direct hits on infantry columns marching up to the Lower Piave. They have destroyed three enemy machines since my last report, with no loss to ourselves. Very low clouds for last four days.

July 6th.—The G.O.C. British Forces in Palestine reports :—Activity during the past fortnight has in general been continued to the operations of the Air Services.

GWYNNES
LIMITED.

CONTRACTORS TO H.M. GOVERNMENT.

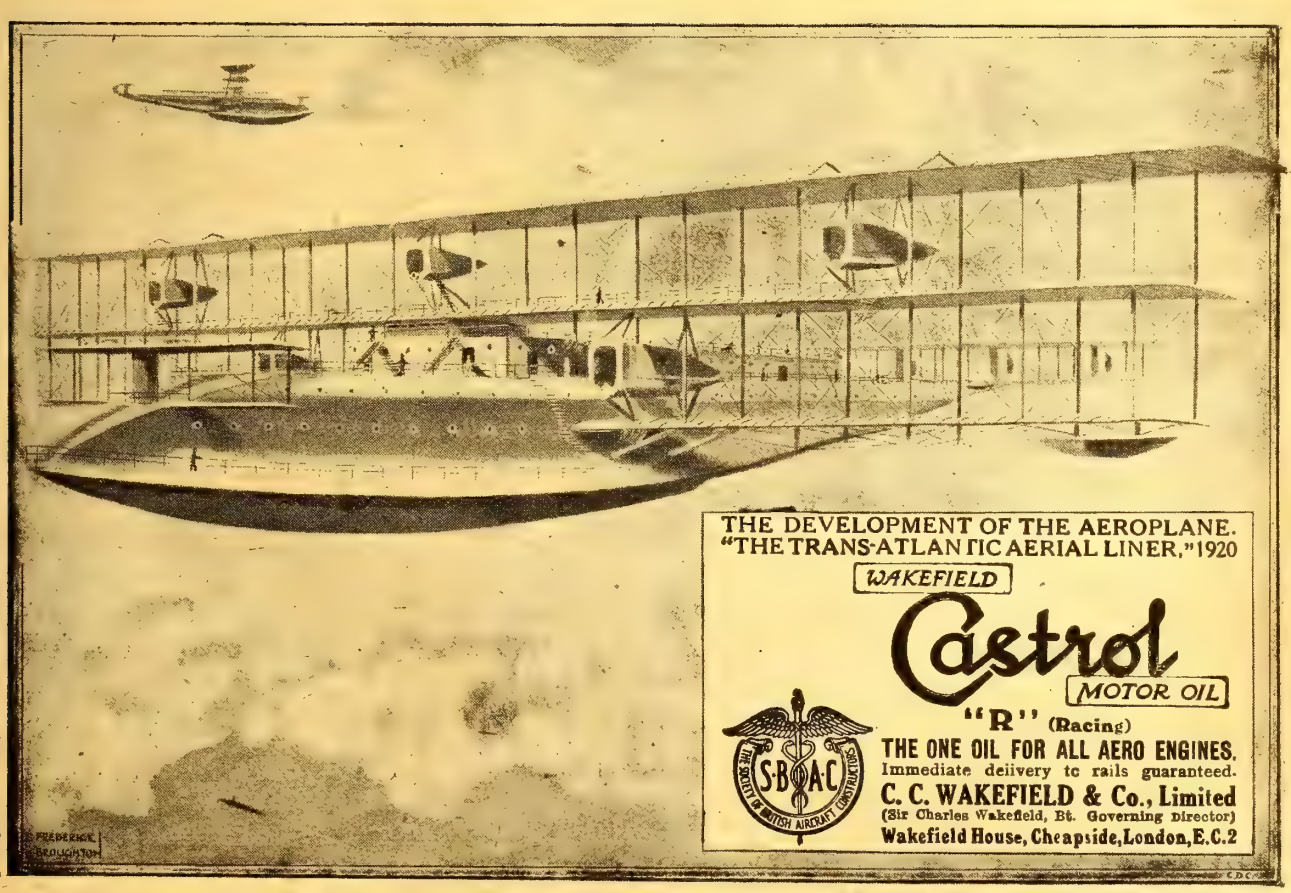
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ENGINEERS, LONDON.

"GWYNNE, LONDON."



On June 25th Amman Station (on the Hedjaz Railway, 25 miles east of the Jordan, by the Jericho bridgehead), camps, and aerodromes were successfully attacked by the Royal Air Force. On June 27th bombs were dropped on camps, troops, and transport in the Rujm el Osir, with good effect.

AIR FORCE.

AIR MINISTRY COMMUNIQUÉS.

JULY 2nd.—During the night July 1st-2nd enemy's aerodrome at Boulay (Bolchen) was successfully attacked, bursts being observed on the aerodrome and hutments.

The Oppau Works, Soda Fabrik, and railway line at Mannheim were bombed with good effect, as were also the railway works at Thionville.

On July 2nd bombs were dropped on the railway station at Trèves. Our formation was attacked over their objective by 12 enemy machines, one of which was shot down.

The railway sidings and sheds at Coblenz were bombed with good results. All our machines returned safely

JULY 5th.—On the morning of July 5th our machines heavily attacked the railway station at Coblenz. Observation was difficult owing to clouds.

Saarbrücken was also successfully attacked. Our formation was attacked over Saarbrücken by hostile aeroplanes, one of which was brought down in flames and another was driven down.

All our machines returned safely.

JULY 7th.—On the afternoon of July 6th our squadrons successfully attacked the railways at Metz-Sablon. Two and a-half tons of bombs were dropped on this objective. Our formations were attacked over the objective by enemy machines, one of which was driven down.

All our machines returned safely.

During the night of July 6th-7th our machines successfully attacked the railway station and sidings at Saarbrücken, and the railways at Metz-Sablon.

JULY 8th, 7.30 p.m.—On the 7th inst. the station and factories at Kaiserslautern were attacked. Hostile machines were engaged over the objectives, and one of them was shot down.

Two of our machines are missing.

On July 8th the railway station, workshops, and sidings at Luxembourg were bombed by our squadrons. Bursts were observed in the station, and also in the workshops

THE CASUALTY LIST.

MILITARY.

Reported July 3rd.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Billings, Sec. Lt H. B., R.F.C.

Reported July 5th.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Wilson, Capt. J R., R.E., attd. R.F.C.

Reported July 6th.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Gavaghan, Sec. Lt. C., R.F.C.
Kennedy, Capt. D. S., R.F.C.
McNeil, Sec. Lt. F. G., R.F.C.
Tilney, Maj. L. A., M.C., R.F.C. (Lt. Household Cav.).
Whitehead, Sec. Lt. E. A., R.F.C.

AUSTRALIAN FORCE.—KILLED.—Jones, Sec. Lt. S., Aust. F.C.
Loram, Sec. Lt. S. A., Aust. F.C.
Martin, Sec. Lt. W. S., Aust. F.C.

ACCIDENTALLY KILLED.—Turner, Sec. Lt. F. C., Aust. F.C.

WOUNDED.—Ebeling, Sec. Lt. C. R., Aust F.C.

MISSING.—Hammond, Lt. T. J., Aust. F.C.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONER IN GERMAN HANDS.—Rintoul, Sec. Lt. A., Aust. F.C.

Reported July 8th.

PREVIOUSLY REPORTED PRISONER IN GERMAN HANDS, NOW REPORTED KILLED WHILE ATTEMPTING TO ESCAPE.—Medlicott, Sec. Lt. H W., R.F.C.

INDIAN FORCES.—ACCIDENTALLY KILLED.—Paterson, Lt. J. H., I.A.R.O., attd. R.A.F.

CANADIAN FORCE.—KILLED.—Hollingworth, Lt. A., Que. R., attd. R.A.F.
Reynolds, Lt. G. E., Ont. R., attd. R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED BY GERMAN GOVERNMENT KILLED OR DIED OF WOUNDS.—Stuart-Smith, Lt. P. J., Can. Cav., attd. R.A.F.

ACCIDENTALLY KILLED.—Scott, Lt. N., E. Ont. R., attd. R.A.F.

DIED.—Bennett, Lt. C. N., Can. M.G.C., attd. R.A.F.

WOUNDED.—Allan, Lt. D. J., Man. R., attd. R.A.F.; Campbell, Lt. K. P., Sask. R., attd. R.A.F.

MISSING.—Foord, Lt. E. A., Man. R.; attd. R.A.F.
Harper, Lt. N. S. B., C.R., attd. R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS IN GERMAN HANDS.—MacDonald, Lt. D. A., Can. For. Corps, attd. R.A.F.; Zieman, Lt. J. R., E. Ont. R., attd. R.A.F.

Reported July 9th.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Gill, Lt. H. G., W. Yorks. R., attd. R.F.C.

AIR FORCE.

Reported July 3rd.

KILLED.—Bonner, Sec. Lt W.; K.O. Lancs. R and R.A.F.
Brown, Sec. Lt. R. R., R.A.F.
Erskine, P./F./O. J., R.A.F.
Hastie, Sec. Lt. H. N., R.A.F.
Shackell, Lt. C. J., R.A.F.
Watchorn, Sec. Lt. C. E., R.A.F
Wraight, Sec. Lt L. C., R.A.F

DIED OF WOUNDS.—Nelson, Lt. J. N., R.A.F.
Rennie, Lt. E. C., R.G.A., attd. R.A.F.

WOUNDED.—Ashford, Sec. Lt. A. E. N., R.A.F; Davidson, Sec. Lt. J. D., R.A.F; Forgie, Sec. Lt. J. S., R.A.F.; Jourdan, Lt. W. T., R.A.F.; Kelly, Lt. V. T., R.A.F.; New, Sec. Lt. A. C., R.A.F.

MISSING.—Atkins, Sec. Lt. W. T. J., R.A.F.; Jackman, Lt. J. R., D. of Well. R., attd. R.A.F.; Kemp, Sec. Lt. P., R.A.F.; MacCartney, Lt. D. A., R.A.F.; Puiry, Capt. R O., R.A.F; Rickett, Sec. Lt. W. H. A., R.A.F.; Sykes, Sec. Lt. J. A., R.A.F.; Turnbull, Lt. J. S., Worc. R. and R.A.F.; Wharton, Sec. Lt. C. E., R.A.F.

Reported July 4th.

KILLED.—Comber-Taylor, Capt. E. H., R.A.F.
Davis, Lt. H. E. (M.C.), R.A.F.
Humberstone, Sec. Lt. J., R.A.F.
Neighorn, Sec. Lt. K., R.A.F.
Pearson, Capt. W. R. G., R.A.F.
Stell, Sec. Lt. J., Royal Scots, attd. R.A.F

PREVIOUSLY REPORTED WOUNDED, NOW REPORTED DIED OF WOUNDS.—Dixon, Sec. Lt. W. H., Seaforth Highrs., attd. R.A.F

WOUNDED.—Bell, Lt. R. S., R.A.F.; Grant, Sec. Lt. J. D., R.A.F.; Lane, Sec. Lt. R. A., R.G.A., attd. R.A.F.; Lane, Lt. R. B., R.A.F.; McGoown, Sec. Lt. J. S., R.A.F.; Robinson, Capt. L. N., R.A.F.; Runciman, Lt. G. K., R.A.F.; Tagg, Sec. Lt. W. A., R.A.F.; Todd, Lt. A. J. North Staffs. R., attd. R.A.F.; Vale, Lt. R. E., R.A.F.

Reported July 5th.

KILLED.—Flynn, Sec. Lt. V. J., R.A.F.
Harran, Lt. F. St. P., R.A.F.
McFarlane, Lt. W. S., Royal Scots and R.A.F.
Phillips, Sec. Lt. J. E., R.A.F.
Scales, Capt. H. J., R.A.F
Sessions, Lt. D. H., R.A.F.

DIED.—Leach, Lt. F., Manchester R. and R.A.F.

WOUNDED.—Acheson, Sec. Lt. J., R.G.A., attd. R.A.F.; Clark, Sec. Lt. A. S., Cameron High'rs and R.A.F.; Deroeper, Lt. J. G. H., R.A.F.; Dove, Sec. Lt. C. B., R.A.F.; Gadsdon, Lt. C. H., Essex R., attd. R.A.F.; Molincaux, Sec Lt W., R.A.F.; Whitehouse, Sec. Lt. J., Worcester R., attd. R.A.F.

MISSING.—Carr, Sec. Lt. R. G., R.A.F.; Titchener, Lt. F., R.A.F.; Wilson, Lt. W. K., R.A.F.

Reported July 6th.

KILLED.—Cameron, Sec. Lt. J., R.A.F.
Cole, Sec. Lt. G., R.A.F.
Kitchen, Lt. J. F. R., R.A.F.
Little, Sec. Lt. D. L., R.A.F.
Paterson, Lt. J. H., R.A.F.
Redler, Lt. H. B., R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Davidson, Sec. Lt S., R.A.F.

WOUNDED.—Erskine, Lt. H., R.A.F.; Rae, Sec Lt. C. J., R.A.F.; Woodman, Sec. Lt. K. C. B., R.A.F.

MISSING.—Cobdin, Sec. Lt. A. J., R.A.F.; Cutmore, Lt. W. C., R.A.F.; Dumville, Sec. Lt. E., W. Rid. R. (T.F.), attd. R.A.F.; Duncan, Sec. Lt. W. G., R.A.F., Ingram, Sec. Lt. L. J. W., R.A.F.; Jones, Lt. A. D. R., R.A.F.; Learn, Lt. G. A., R.A.F.; Peckham, Lt. C. W., R.A.F.; Pryor, Lt. J. W., S. Lancs. R., attd. R.A.F; Thompson, Lt. J. W., R.A.F.; Williams, Lt. F., R. Welsh Fus. and R.A.F.

Reported July 8th.

KILLED.—Hamilton, Sec. Lt. G. C. R., R.A.F.
Henderson, Capt. I. H. D., M.C., Arg. Suthd. Highrs., attd. R.A.F.
Maltby, Sec. Lt. A. J., R.A.F.
Stewart, Sec. Lt. H. M., R.A.F.
Tyrrell, Capt. J. M., R.A.F.
Uhrich, Lt. C. P., R.A.F.

WOUNDED.—Carey, Sec. Lt. R. B., R.A.F.
Forsyth, Sec. Lt. J., R.A.F.
Row, Sec. Lt. H. N. E., R.A.F.
Style, Sec. Lt. C. S., R.A.F.

MISSING.—Robins, Lt. S. M., R.A.F.

Reported July 9th.

KILLED.—Bannister, Lt. H. S., R.A.F.
Carter, Sec. Lt. A., R.A.F.

DIED OF WOUNDS.—Storrs, Sec. Lt. H. L., R.A.F

DIED.—Carling, Lt J. B., R.A.F.
Hodge, Sec. Lt. W., R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONER.—Ratcliffe, Sec Lt. T., R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONER.—Holman, Sec. Lt. H. G., R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED BELIEVED PRISONERS.—Boulton, Sec. Lt. F. E., R.A.F.; Harris, Sec. Lt. N. B, R.A.F.; Lamont, Sec. Lt. W., R.A.F.; Mitchell, Sec. Lt. H., R.A.F.; Rainier, Sec. Lt. G. A., R.A.F.; Tansley, Sec. Lt. H E., K.R.R.C. and R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED BELIEVED WOUNDED AND PRISONERS.—Crawford, Sec. Lt. W. L., K.F.R.C. and R.A.F.
Wilson, Lt. H. B. B., Q.O. Glasgow Yeo. and R.A.F.

Reported July 10th.

DIED OF WOUNDS.—Jackson, Sec. Lt. H. A. B., R.A.F.
Mousley, Sec. Lt. O. O., R.A.F.

DIED.—MacDonald, Lt. G. O., R.A.F.
Prince, Sec. Lt. W. F. J., Lond. R., attd R.A.F.
Westcott, Sec. Lt. W. E., R.A.F.

WOUNDED.—Drummond, Lt. J. E., R.A.F.; Dyson, Sec. Lt. H., R.A.F.; Mundy, Lt. F. W., Bucks. Yeomanry and R.A.F.

MISSING.—Arnold, Sec. Lt. J., King's L'pool R., attd. R.A.F.; Bradley, Lt. H. B., R.A.F.; Daltrey, Sec. Lt. F., R.A.F.; Nightingale, Lt. E., R.A.F.; Pontin, Lt. S. C. M., R.A.F.; Roberts, Lt. T., R.A.F.; Stubbs, Lt. W. H., R.A.F

PERSONAL NOTICES.

NAVAL.

DEATH.

ALDERSON.—Major Reginald L. Alderson, R.A.F., died on June 30th, at the Naval Hospital, Hull, in his 39th year.

MARRIAGE.

DRUMMOND—BOSANQUET.—On July 2nd, Lt.-Comdr. G. Heneage Drummond, R.N., son of Capt. and Mrs. Algernon Drummond, of Cwmcarvan Court, Monmouthshire, was married in Christ Church, Mayfair, to Maud, daughter of the late Mr. Tindal Bosanquet, of Claysmore, Enfield, the ceremony being performed by the Rev. Sir Charles Shaw, vicar of Wrotham, Kent, and the Rev. E. S. Hilliard, vicar.

BIRTHS.

HERVEY.—On July 5th, at 12, Langdale Road, Victoria Park, Manchester, to Elsie (née Kellett), wife of Maj. G. E. Hervey, D.S.C., R.A.F., of a son.

LESLIE.—On June 28th, at 12, Park Street, Park Lane, the wife of Major (acting) Reginald Leslie, D.S.C., R.A.F., of a daughter.

MILITARY.

DEATHS.

COAPE-ARNOLD.—Lt. Raymond Coape-Arnold, R.A.F., who was killed in an aeroplane accident in the Midlands, was the

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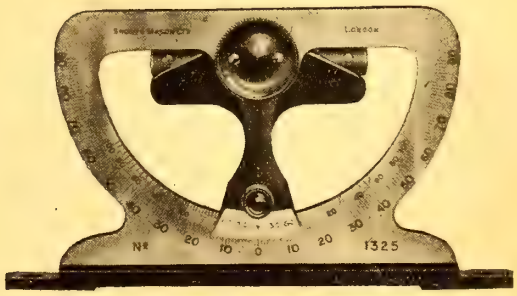
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youngest son of Mr. and Mrs. Coape-Arnold, of Wolvey Hall, Hinckley, and was 26 years of age. He was born at Wolvey Hall, and after leaving college at Dumfries, travelled a good deal, visiting Canada, South Africa, and other countries. On the outbreak of war he joined the South Staffordshire Regiment, and obtained a commission in November, 1915, after service in France. Mr. Arnold joined the R.F.C. a year ago after recovering from an illness.

CHAMBERS.—Capt. William Geoffrey Chambers, Lincolnshire Regt., attached R.A.F., was the second son of Mr. T. W. S. Chambers, grandson of the late Sir Thomas Chambers, Q.C., M.P., and nephew of Lady Southwark and Lady Roxburgh, C.B.E. He was born in June, 1896, and was killed while flying abroad on May 15th, after nearly four years' service.

RENNIE.—Lt. Edward Clement Rennie, R.G.A., attd. R.A.F., who died on June 14th of wounds received in action, was the son of Dr. and Mrs. George E. Rennie, of "Koorali," Point Piper, Sydney, N.S.W.

WHITFELD.—Lt. Nigel Bernard Whitfeld, Yeomanry, attd. R.A.F., who died on July 7th from injuries received in a flying accident, was the younger son of Mr. and Mrs. T. Stanley Whitfeld, of Forest Row, Sussex. He was 27 years old.

Engagements.

HILL—ALEXANDER.—An engagement is announced between Capt. Geoffrey Terence Roland Hill, M.C., R.A.F., second son of Professor Lt. J. M. Hill, M.A., D.Sc., LL.D., F.R.S., and Mrs. Hill, of 18, Ferncroft Avenue, Hampstead, London, N.W., and Mary (May) Anna Catherine Lœtitia, second daughter of the late Colonel Charles Murray Alexander, and Mrs. Alexander, of Termon, Carrickmore, Co. Tyrone.

MINCHIN—WHITE.—An engagement is announced between Lt. Colonel F. F. Minchin, D.S.O., M.C., R.A.F., second son of Major-General F. F. Minchin, C.B., and the late Margery Minchin, of Armagh, Co. Tipperary, Ireland, and Holywell House, Bishops Waltham, Hampshire, and Margarita Beatrice (Rita), only daughter of Mr. and Mrs. White, of The Poplars, Maidstone.

Marriages.

ALFORD—CHAMBERLAYNE.—On June 29th, at St. James's Church, Piccadilly, by the Rev. John E. T. Evitt, Capt. Francis R. Alford, M.C., R.A.F., was married to Rosalie Francesca, daughter of Mr. and Mrs. Tankerville Chamberlayne, of Cranbury Park, Hants.

BURTON—TYLER-COVE.—On July 6th, at Brompton Parish Church, by the Rev. Preb. A. W. Gough, Lt. Donald Fraser Burton, Suffolk Regt., attached R.A.F., younger son of Mr. S. H. Burton, M.B., F.R.C.S.Eng., of 49, S. Giles Street, Norwich, was married to Aileen, younger daughter of the late Mr. W. J. Tyler-Cove, of Langwathby, Cumberland.

FIELDING-JOHNSON—WHETSTONE.—On July 2nd, 1918, at St. James's, Piccadilly, by the Rev. Dr. James, D.D. (President, St. John's College, Oxford), and the Rev. Canon Reaver Smith, M.A., Vicar of Edgbaston, William Spurrett Fielding-Johnson, M.C., Yeomanry, attached R.A.F., younger son of Thomas Fielding-Johnson, J.P., of Coscote Hall, Leicester, was married to Gwendolen Edith Whetstone, daughter of the late Walter Whetstone, of Knighton, Leicester, and of Lady Hiley, of Beechfield, Edgbaston.

MOON—ROBERTSON.—On July 3rd, at Christ Church, Lancaster Gate, by the Rev. H. A. Keates, uncle of the bride, Lt. Norman Moon, Hussars, attached R.A.F., of Willaston, Chester, son of Mr. and Mrs. James Moon, to Mary Florence, second daughter of Sir Henry and Lady Robertson, of Pale, Corwen.

ROUTLEY—GROOM.—The marriage arranged between Maj. R. H. C. Routley, Royal Fusiliers, attached R.A.F., and Miss M. Sylvia Groom took place at the Chapel Royal, Savoy, on Tuesday, July 9th, at 12.30.

* * *

Max Mehliss, R.F.C., London, has been missing since Nov., 1917. Information will be gratefully received for his parents (South Africa) by Miss Summers, Coddenham, Ipswich.

* * *

Sec. Lt. D. C. Tucker, R.F.C., has been missing since March 24th. Will friends of prisoners of war in Germany kindly ask for news of him? Any information will be gratefully received by his mother at Durley Park House, Keynsham, Somerset.

* * *

Mr. J. R. de C. Taylor, of the Rifle Brigade, late R.F.C., has been appointed Aide-de-Camp to Sir William Manning, the newly-appointed Governor of Ceylon. On leaving Sandhurst, Mr. Taylor was attached to the Flying Corps and gazetted to the Rifle Brigade. While flying in France last year he received severe injuries in an accident, from which he has practically recovered.

AIR FORCE.

Deaths.

BALLS.—Lt. F. W. Balls, R.A.F., who died on July 1st at a general hospital abroad, was the son of Mr. W. G. Balls and Mrs. Balls, of Hill Side, Stowmarket. He was 24 years old.

BARTLEY.—At a south coast town inquest held on July 5th on the body of Sec. Lt. R. V. Bartley, American Air Force, a verdict of "Accidental death" was returned. The pilot had crashed in a spinning nose-dive from a height of 1,200 feet.

POLLARD.—Sec. Lt. Wilfred Walter, R.A.F., who died on July 5th in an R.A.F. hospital, was the only son of Dr. and Mrs. W. H. Pollard, of Hagley Road, Birmingham. He was 19 years old.

WILLIS.—Major Ernest Willis, R.A.F., who died on July 1st whilst on active service, was the youngest son of the late David Willis, of Garbrand Hall, Ewell, Surrey. He was in his 35th year.

Engagements.

DURTNELL—EAST.—An engagement is announced between Lt. Harry Watson Durtnell, R.A.F., eldest son of Mr. and Mrs. Harry Durtnell, Sevenoaks, Kent, and Eveline Adela, youngest daughter of the late George East, of Curzon Street, and Mrs. East, of 1, Southwell Gardens, S.W.

SIMONS—GROSS.—The marriage arranged between Capt. William Vazie Simons, R.A.F., son of the late Prof. W. Vazie Simons, and grandson of the late Henry Winfield Hora, Deputy of the City of London, and Miss Madeleine Mary Gross, second daughter of H. Livingstone Gross, Esq., and Mrs. Gross, of Normanhurst, Hermon Hill, South Woodford, Essex, will take place quietly at South Woodford Church, on Wednesday, Aug. 7th, at 1.30 p.m. There will be no reception.

SMYTH.—The marriage of Lt. Ernest B. Smyth, R.A.F., eldest son of Mr. and Mrs. F. Buxton Smyth, of 18, Overbury Avenue, Beckenham, Kent, and Lina, eldest daughter of Mr. and Mrs. J. C. Gilbert, of 35, Binfield Road, Clapham, will take place at St. Matthew's Church, Westminster, on July 15th, at 12 o'clock.

There will be no reception, but all friends will be welcome at the church.

Marriages.

BATEMAN—WATT.—On July 4th, at South Street Baptist Church, Greenwich, by the Rev. R. French, Capt. Alfred D. Bateman, R.A.F., only son of Mr. and Mrs. David Bateman, Bellingham Road, S.E., was married to Ethel May, only daughter of Mr. and Mrs. James Watt, of "Alford," Bromley Road, Catford.

DAVID—JONES.—The marriage took place on July 2nd, at St. Mary's, Holly Place, Hampstead, of Mr. Alexander Noel David, R.A.F., only son of Mr. Alexander J. David, K.C., and Mrs. David, and Violet Norah, elder daughter of Mr. and Mrs. John Gregory Jones, of 2, Parsifal Road, Hampstead. The Rev. P. Valentine performed the ceremony.

GOLDSWORTHY—DONOVAN.—On July 2nd, at Ballymore Church, by the Dean of Ferns, Lt. Elmer Colin Goldsworthy, R.A.F., Pacific Grove, California, U.S.A., was married to C. A. Bright Donovan, V.A.D., eldest daughter of the late Richard Donovan, D.L., and Mrs. Donovan, Ballymore, Camolin, Co. Wexford.

HEFFER—WILLIAMSON.—The marriage between Eric Heffer, Lt., R.A.F., only son of Mr. and Mrs. Percy Heffer, of Everdene, Watford, and Agnes, daughter of Mr. J. C. Williamson, of 3, Palace Houses, took place at All Saints' Church, Margaret Street, on the 9th inst.

TRASK—ROBINSON.—On July 5th, at Doddridge Chapel, Northampton, Eric D. Trask, Sec. Lt., R.A.F., only son of the late Mr. W. Trask and Mrs. Trask, of London, was married to Elsie S. Robinson, elder daughter of Mr. and Mrs. J. P. Robinson, of Northampton.

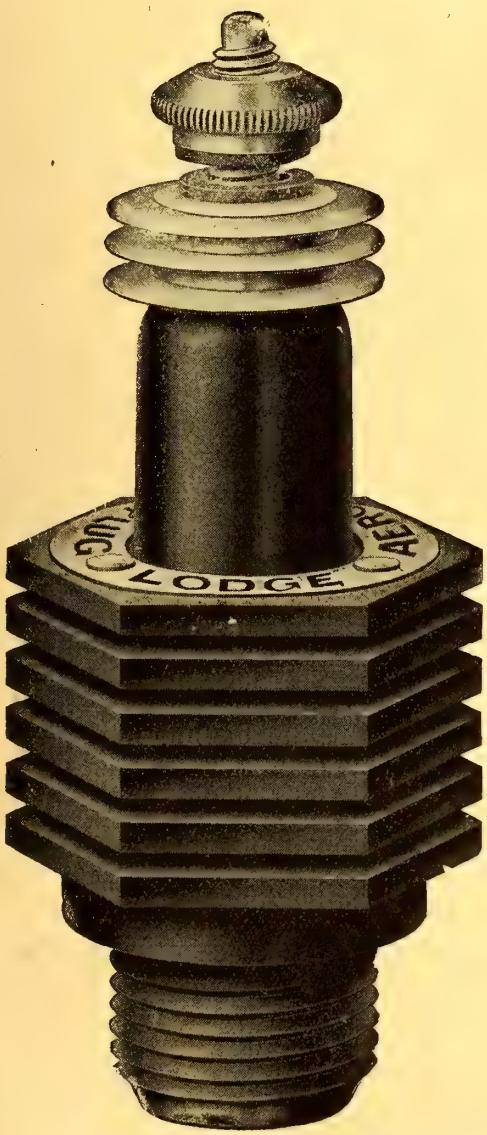
THOMAS—LE PATOUREL.—The marriage of Lt. A. J. Thomas, R.A.F., and Ella Dorothea Court Le Patourel, daughter of the late Paul B. Le Patourel, Calcutta, took place at Brompton Oratory on July 9th.

VILLIERS—HEBER-PERCY.—The wedding of Maj. Oliver Villiers, D.S.O., R.A.F., and Miss Aleen Heber-Percy, took place on July 6th, at St. Paul's Church, Knightsbridge.

WICKHAM—VASSALL.—On July 6th, at St. Mary's Church, Harrow-on-the-Hill, by the Rev. Preb. A. P. Wickham, father of the bridegroom, assisted by the Rev. J. G. Vassall, uncle of the bride, and the Rev. Preb. W. Joyce, Vicar of the Parish, Reginald Trelawney, R.A.F., second son of the Rev. A. P. Wickham, of East Brent Vicarage, Somerset, and of the late Mrs. Emily Helena Macpherson Wickham, was married to Mary Oliver, younger daughter of the late Rev. William Vassall, and of Mrs. Vassall, of Aisholt, Somerset.

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BIRTHS.

HILL.—On June 28th, to Helen (née Morton), wife of Major Roderic Hill, R.A.F., at Formosa, Alexandra Road, Farnborough—a son.

HOGAN.—On July 1st, at Park View, Langley Avenue, Surbiton, the residence of her parents, to Stella (*née* Prior), the wife of R. V. J. S. Hogan, Lt. R.A.F.—a son.

KEITH.—On July 4th, 1918, at 27, Clifton Gardens, Folkestone, the wife of Lt. F. G. St. C. Keith, R.A.F., of a daughter.

LUCAS.—On July 2nd, at Rosemary, Pangbourne, the wife of Lt. L. Lucas, R.A.F., of a son (stillborn).

MORLEY.—On June 23rd, 1918, at "Littlecroft," Morris Road, Southampton, the wife of Capt. John William Morley, R.A.F., of a son.

PALMER.—On July 1st, at 13 and 14, Prince's Gate, S.W.7, the wife of Lt., H. J. Palmer, R.A.F.—a daughter.

FOREIGN COMMUNIQUES.

FRANCE.

JULY 2nd.—Enemy raiders were signalled approaching Paris last night. The "Alert" sounded at 12.34 and the "All clear" at 12.59. The raiders were turned back before reaching the outskirts of the capital.

JULY 4th.—During the month of June 29 enemy machines were brought down by our anti-aircraft defences, including three at night. In addition, 13 machines were damaged by our fire and compelled to abandon their mission.

JULY 5th.—Our anti-aircraft guns brought down two enemy aeroplanes.

JULY 6th.—Between July 1st and July 6th our crews brought down or drove down out of control 16 German aeroplanes, and set fire to seven captive balloons. In addition, two enemy machines were shot down by anti-aircraft fire.

During the same period our bombing machines dropped 56 tons of explosives on the railway stations, cantonments, and aviation grounds in the enemy zone. A fire was observed in the railway stations of Chaulnes and Amagnelucquy, and violent explosions, followed by fires, in the dumps of Neuville and Roye.

JULY 8th.—On Saturday and Sunday 14 aeroplanes were brought down or put out of action, and two captive balloons were set on fire by our pilots.

Our bombing machines dropped 28 tons of projectiles in the course of their raids by night in the regions of Fismes, Hirson, Fère-en-Tardenois, Amagne-Lucquy, etc.

Latest reports show that Lt. Eps brought down on May 31st, June 10th and 13th his tenth, eleventh, and twelfth machines. Up to date this pilot has accounted for seven aeroplanes and five Drachens. Adjudant Marmartch brought down on June 1st and 15th and July 1st his tenth, eleventh, and twelfth aeroplanes.

Adjudant Montrion brought down on June 7th and 17th his tenth and eleventh machines—nine aeroplanes and two Drachens. Sous Lt. Boyau brought down on July 1st his twentieth machine, and on July 5th his twenty-first and twenty-second machines. His total is 14 Drachens and eight aeroplanes. Officially reported missing in June, Adjudant Quette and Serjt. Bayliss accounted for ten and twelve machines respectively.

GERMANY.

JULY 2nd.—Lt. Udet obtained his 37th and 38th aerial victories, and Lt. Kroll his 28th and 29th.

JULY 3rd.—Four aeroplanes have been shot down from an American squadron of nine units. Lieutenant Udet thereby obtained his 39th aerial victory, and Lieutenant Loewenhardt his 33rd and 34th.

Lieutenant Friedrich and Serjeant Thom shot down their 20th opponents.

JULY 4th.—Lt. Udet obtained his 40th aerial victory and Lt. Rumey his 29th and 30th.

JULY 5th.—Lt. Meckhoff obtained his 35th aerial victory and Lt. Thuy his 25th.

JULY 6th.—Lt. Rolle achieved his 20th aerial victory.

JULY 7th.—Lt. Kroll obtained his 30th aerial victory and Lt. Konnecke his 21st.

ITALY.

JULY 2nd.—Yesterday morning five English aeroplanes bombed the enemy base at Cattaro. A ton of bombs was dropped. A ship near the submarine base was set on fire and one bomb fell in the middle of the submarine quarter.

All the English machines returned to their base.

JULY 4th.—During the last two days our bombardment flights—together with Allied planes—dropped about 18,000 kilos (18 tons) of bombs on important centres and crossroads of the enemy on the Lower Piave. Troops and transport were attacked with machine-gun fire at a low altitude. An airship effectively bombarded the railway junction of the Sugana Valley to the south of Trento.

JULY 5th.—During the last days 10 hostile aeroplanes and two captive ballons were brought down in air fighting.

JULY 6th.—Our aviation service was very active bombarding enemy troops and centres beyond the Lower Piave. Two enemy aeroplanes were brought down.

JULY 8th.—Our own and Allied aeroplanes and airships of the Italian Army and Navy were during the day yesterday and last night intensely and effectively active. Eight enemy machines were brought down in air fighting.

U. S. A.

JULY 2nd.—American aviation squadrons co-operated with our troops in the action north-west of Château-Thierry. Three of our aviators did not return.

JULY 3rd.—It is believed that five more German aeroplanes were driven down by American aviators yesterday afternoon, making a total of eight or nine for the day, at the cost of the loss of two men and machines.

Eight machines were flying in the Château-Thierry sector, when they saw a German patrol of 12. The Americans, who were 15 miles behind the German lines, attacked. The Germans dived, but the Americans went on, and one enemy machine after another was seen to fall.

When the Germans broke off the action an American pilot chased them a considerable distance. He was attacked by two of the enemy, but, by skilful manœuvring, escaped, and with his petrol all gone landed in his own lines.

Another aviator dived at four of the enemy and shot one down.

JULY 4th.—Hostile aeroplanes which approached our lines near Vaux and in the Vosges were driven back by our fire.

THE WAR IN REVIEW.

Raids on Germany.

The "Frankfurter Zeitung" of July 3rd says:—

The presence of hostile aviators was signalled early yesterday morning at Mainz. Driven off, however, by our curtain fire, they turned in the direction of Geisenheim, on the Rhine, where some bombs were dropped.

A Karlsruhe telegram in the "Frankfurter Zeitung" for July 2nd states that Allied aviators attacked Ludwigshafen, Landau, and Homburg, in the Palatinate on Sunday night. Some damage was done to house property, whilst one person was killed and two were injured at Ludwigshafen.

The "Könische Volkszeitung" of July 3rd announces that there was an air raid alarm at Cologne on the previous day, but there was no attack.

An Austrian Seaplane.

A "Times" correspondent writing from Italy on July 2nd says:—A seaplane from Pola was brought down, and the three occupants were captured by a destroyer, which sank the seaplane.

The Return of an Ace.

The French aviator and former champion cyclist, Antoine Paillard, who bombed Essen, lost his way in the fog, was interned in Holland, and escaped, has again taken his place among the bombing "aces." He has been promoted to be an officer, and has been awarded the Médaille Militaire.

A Disappearance.

Capt. Kenokstedt and Baron Cederström, who left Stockholm some days ago to fly over the Baltic in a seaplane built for Finland by the Swedish Aviation Company, have disappeared, and as some wreckage belonging to the seaplane has been found round the Aaland Islands, it is feared they have perished.

Baron Cederström was the first Swedish aviator, having learned to fly on a Blériot at Pau in 1909. He held the Blériot agency in Sweden for some years, and eventually took to building aeroplanes. His factory was recently taken over by the Swedish Government for military purposes.

Interned in Denmark.

The Danish Ministry of Justice has decided that the three German aviators who landed with their machine near Vordingborg are to be interned and sent to Odense. The machine arrived at Copenhagen yesterday, and will be stored in the Naval Yard.

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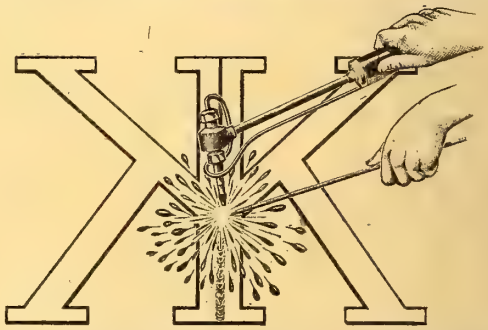
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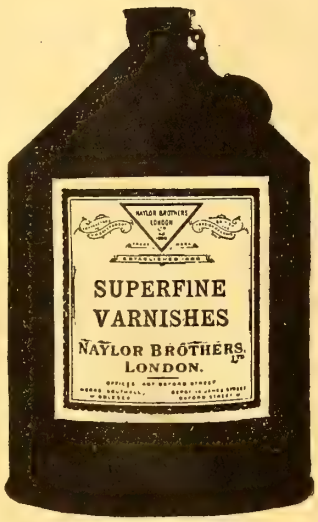
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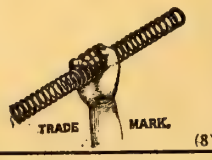
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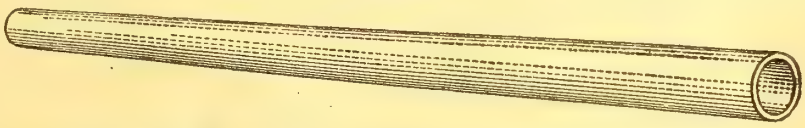
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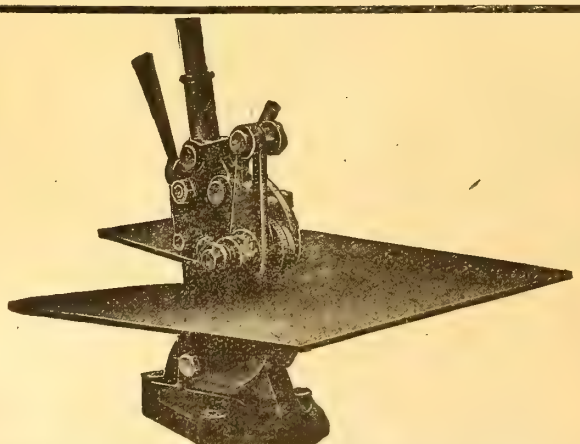
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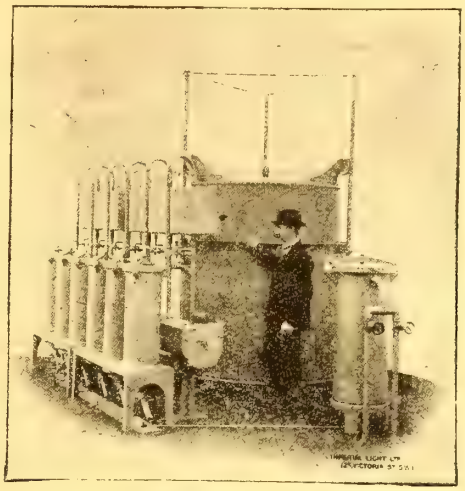
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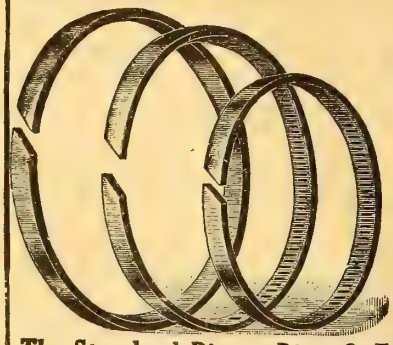
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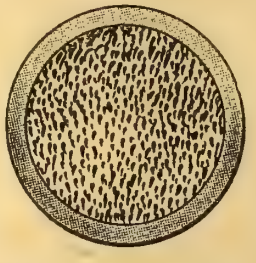
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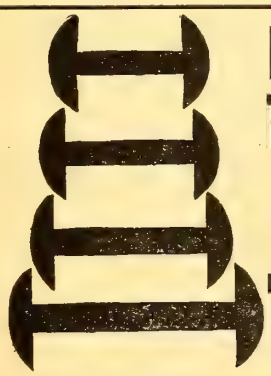
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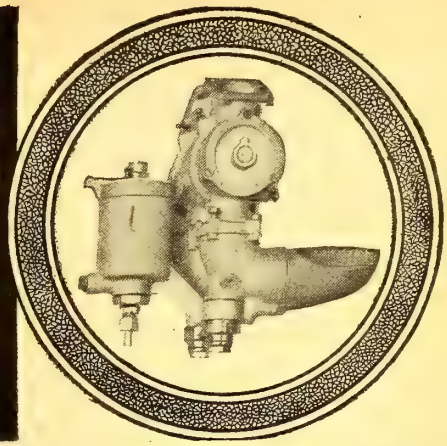
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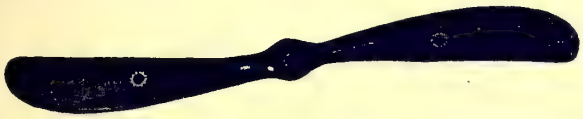
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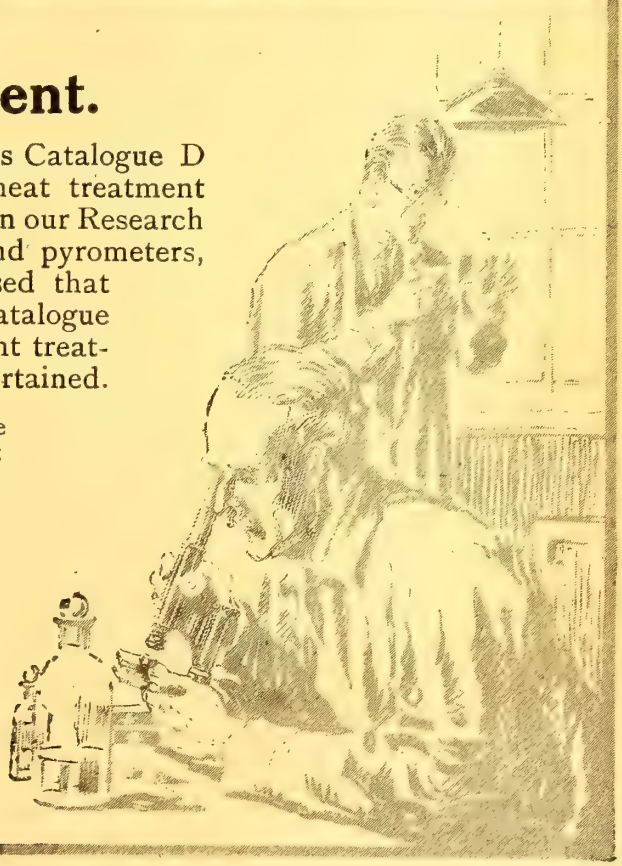
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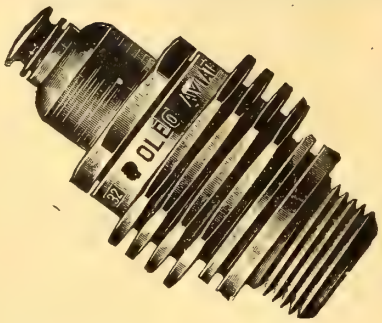
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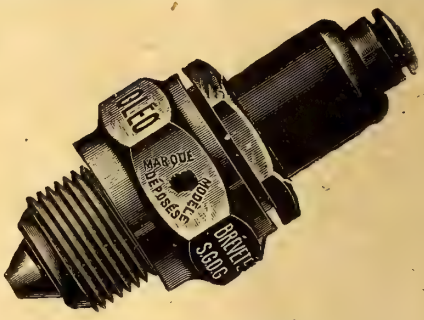
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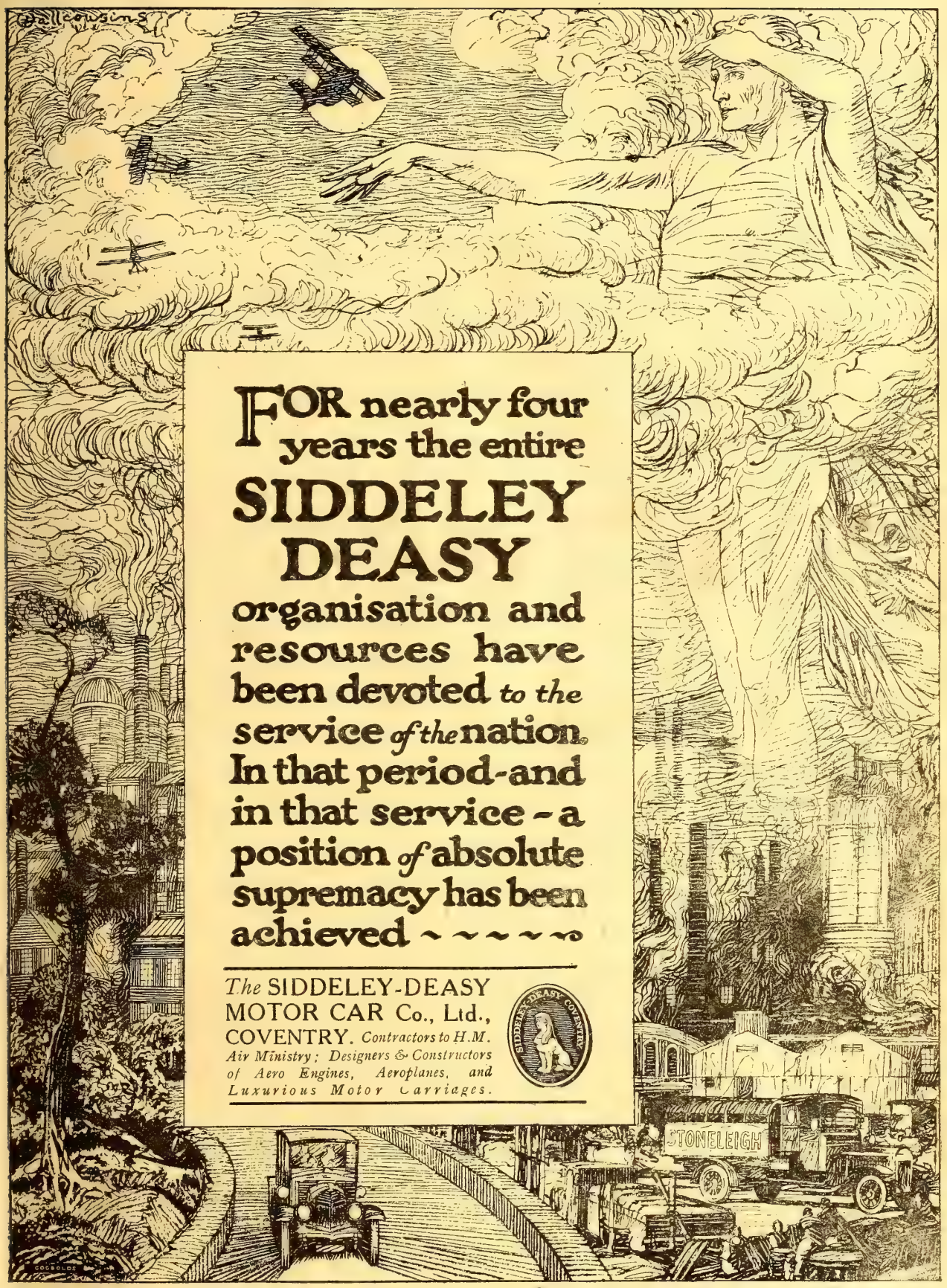
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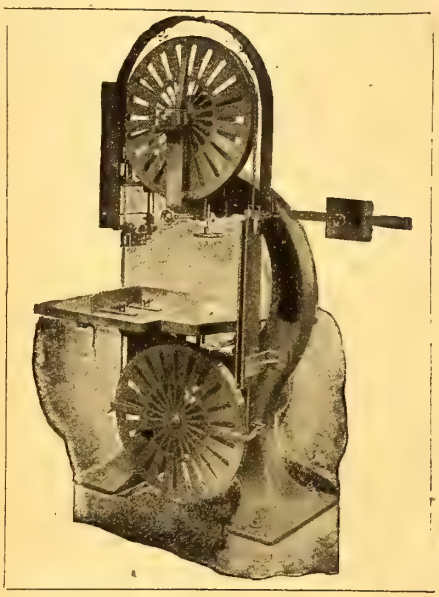
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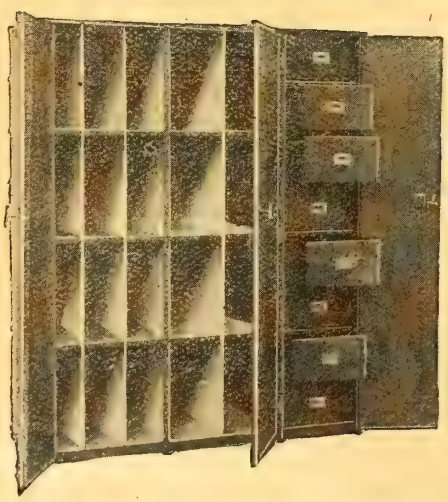
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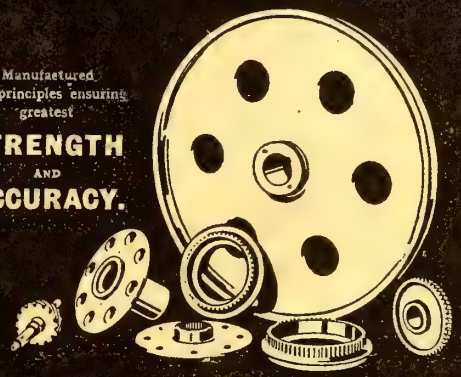
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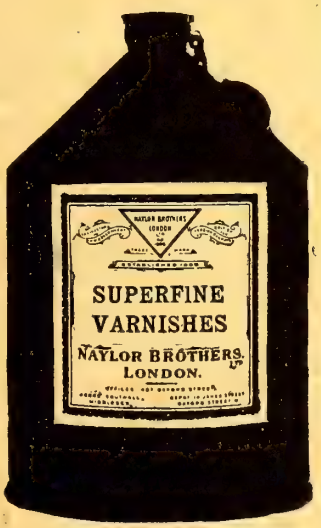
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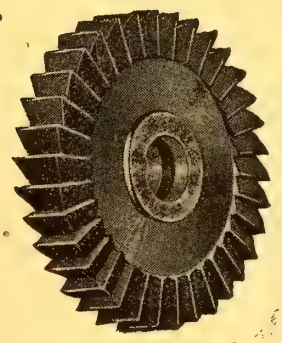
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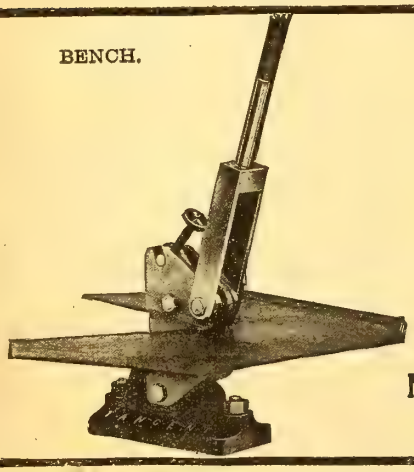
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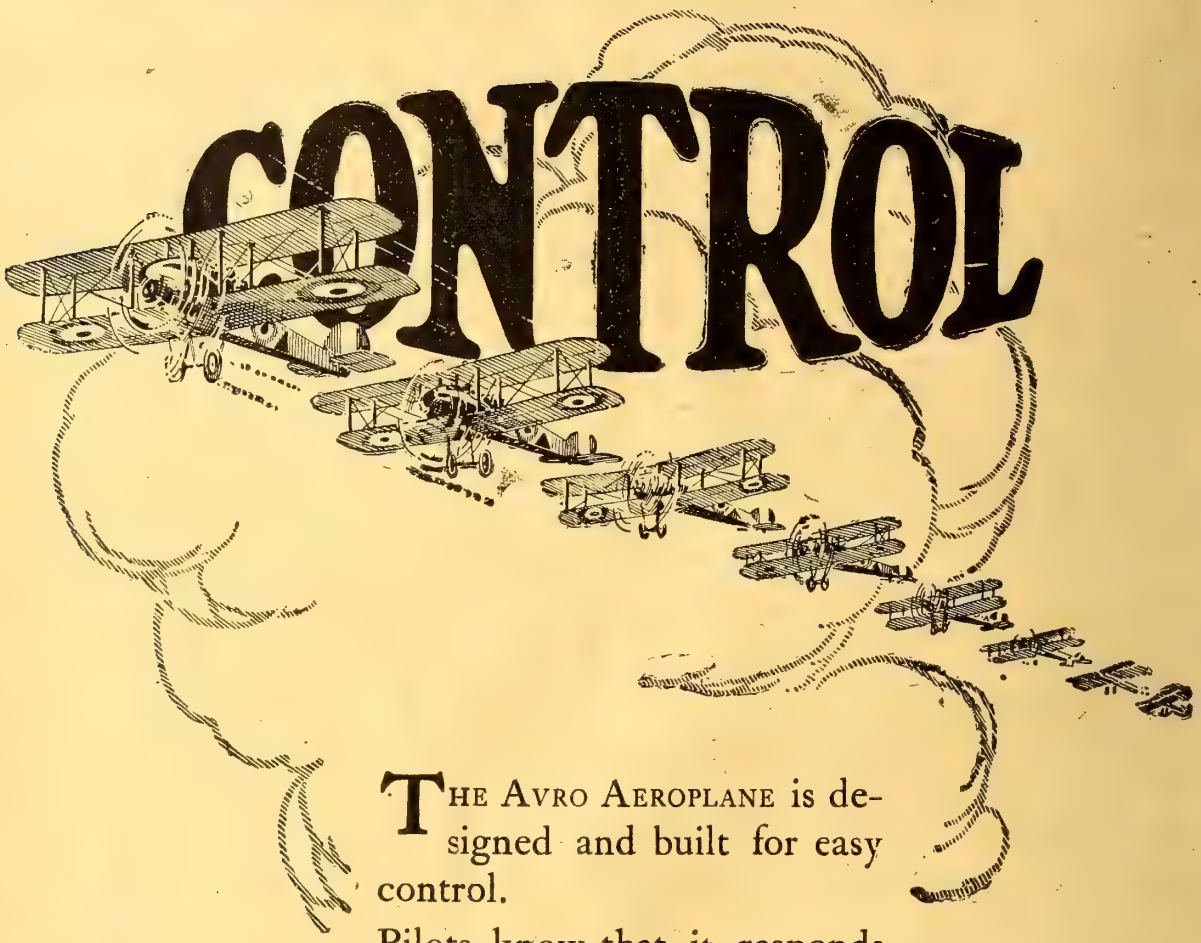
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ON AIR POWER AND SEA POWER.

There is a delightful story of a small girl who was taken by a kind uncle to an aquarium. When they came home she said she had enjoyed her visit very much, but she was rather disappointed because she had not seen all the tinnemies. A searching cross-examination by family and uncle as to what a tinnemy might be failed to elucidate the mystery till she stated, in support of her faith in their existence, that they were in the Prayer Book, and that they were in the sea, and that therefore they ought to be in any aquarium which was fit to be called an aquarium. Then some really brilliant member of the family, who was accustomed to the working of the child brain, suddenly realised that she had frequently heard without understanding the familiar phrase, "the Sea and all that in him is."

Since that day in certain family circles the tinnemy has become quite a familiar friend, embracing generically as he does any kind of queer sea-beast which does not belong to any of the commoner breeds of fish or crustaceans. And in these days of submarines, skimmers, hush-boats, aero-hydroplanes, hydro-aeroplanes, tin-fish, super-marines, depth-charges, blimps, seaplanes, flying-boats, M.L.s., U-boats, P-boats, wasser-bomben, sausage-balloons, and so forth and so on, the great family of the tinnemies has increased out of all knowledge. But the interesting thing about the war tinnemy is that he is so mixed up with air machines of all sorts that one hardly knows to-day where one begins and the other ends. It is, however, gradually becoming clear, even to the Naval intelligence, that the water-beast would soon be helpless without the air-beast to help it.

Interdependence.

Gradually aerial warfare is spreading over the face of the waters, as it already covers the land, and official communiqués of late have told of fierce air-fights in the middle of the North Sea, as well as along the German, Dutch, and Belgian coasts, between considerable forces of seaplanes. Quite recently an Admiralty communiqué related how a patrol of German seaplanes attacked one of our submarines, which came to the surface and fought them, and lost an officer and five men in doing so.

It may also have been noticed that the Admiralty, which, until the Royal Naval Air Service was on the point of expiring, regarded naval aeronautics as a plaything for children or cranks, has, since the birth of the Royal Air Force, taken unto itself with obvious pride the task of issuing special communiqués dealing with the work of all R.A.F. units under the Command of the Navy, including Coast-patrol stations, the land-going machines in Flanders which pertain to Dover Patrol, and the land-going machines in the North-East Mediterranean.

It is curious, by the way, that no mention has been made of the former R.N.A.S. units which have been for so long doing such fine combined sea and land work farther south. One happens to know that, despite their having been ignored officially, their services have been of high value in the campaigns in which they have been concerned. It would seem as if the local Army Command, which recognises their worth, is precluded by convention from mentioning them in dispatches, while the local Naval Command attaches so little importance to the work of the Air Force that it does not take the trouble to recognise the fine service which has been done.

Be that as it may, the Navy as a whole is gradually awakening to the fact that without a fully adequate supply of sea-going aircraft it is impossible for any Navy to hold firmly the command of the sea. And one prophesies with the deepest conviction that when at last the Navy as a whole realises this fact, the Admiralty will insist on having a Real Naval Air Service, if not a revival of the Royal Naval Air Service, the personnel of which will be in, and of, the Royal Navy, though it may draw its matériel from the Air Ministry.

Surface Command.

In this connection it does not seem to have occurred to many people how closely the command of the surface of the sea is interconnected with the command of the air over the sea, and with the command of the waters under the surface. There are enthusiasts who will argue that surface-ships are finished, because of the future development of submarines. Others, again, will argue that both submarines and surface-ships are helpless against attacks by aircraft.

As one of the earliest aeronautical enthusiasts in this country—an enthusiasm which does not decrease with close on ten years' experience—one cannot be accused of disloyalty to one's own branch of war when one says that aircraft alone cannot protect or destroy this country, and that the Fleet is still the chief bulwark of Great Britain, and will so remain, provided that its senior officers either awake to the importance of co-operation with aircraft, or die conveniently and make room for the younger men who know it already.

All the aircraft in the world could not protect us against invasion by a hostile naval Power if we had not our Fleet to protect us. But, on the other hand, an enemy fleet well provided with aircraft and submarines would soon make our Fleet inoperative if we were not equally well provided with both these adjuncts.

In other words, submarines, surface-ships, and aircraft are all equally necessary to any modern fleet which purports to be a fleet. And because the closest co-operation between the three branches is essential to success, it is obvious that they must all be one Service. What sort of co-operation could be expected between submarines and warships if the crews belonged to two different Services, speaking different languages and measuring time, distance, and speed in different units?

Airships and Surface-Ships.

As an illustration of what the command of the surface of the sea means, take the case of airships. To-day the Royal Navy—plus, most distinctly, the R.N.R. and the R.N.V.R.—holds the command of the surface of the North Sea. Behold the result!

If a German submarine spots an airship of any sort, from one of our big rigids down to a blimp or even a kite-balloon, it promptly submerges and stays submerged. The reason is that the skipper knows that if he dared to come to the surface he would promptly be set upon by any and every surface craft within range, and that if there were none within range the airship would at once summon up any that might be within hail of wireless or other signal. The official accounts issued from time to time, bald and undecorative as they are, have made so much perfectly clear.

Take now the opposite case. If a British submarine spots an airship anywhere except right inside German waters it comes to the surface forthwith, and uses its guns. The commanding officer knows that if there are any surface craft in the neighbourhood they must almost inevitably be British, or must at any rate belong to one of the Allied Fleets, and that if a submarine is seen engaging a German airship those surface craft will at once open fire on the airship and not on the submarine.

When once it is on the surface a submarine is a match for any airship, for its guns can reach the airship long before the airship can get into a position to bomb the submarine. Moreover, gunnery is even to-day more accurate than bomb-dropping, assuming that the rival operators are otherwise of equal skill. The consequence is that when a British submarine emerges and shows fight a German airship invariably runs away.

It is obvious then that so far as airships are concerned the command of the surface of the sea is essential to their success as anti-submarine weapons. And it is, one believes, fairly generally admitted that as an anti-submarine weapon, especially in convoy work, the airship has certain advantages over seaplanes or any other heavier-than-air craft.

Seaplanes in Sea War.

The case of the aeroplane or seaplane is perhaps rather different, owing to its smaller size and higher speed. In the case already mentioned, when German seaplanes attacked our submarines, the seaplanes scored because they were harder to hit than an airship. Nevertheless the submarines were right in staying on top to fight instead of submerging and being bombed as they did so. Their fire must certainly have disconcerted the aim of the seaplane bombers, as is admitted by the German report which states that only one submarine was hit by a bomb, and that even then the bomb merely damaged her without sinking her. It was not stated how many guns each submarine carried, but obviously there were more attacking seaplanes than there were defending guns, and so some of the seaplanes doubtless got to close quarters while the guns were shooting at others, which accounts for the casualties from machine-gun fire.

Possibly, also, those particular Naval gunners were not used to anti-aircraft work, and so did not make such good shooting against the seaplanes in the air as they would have done if they had been much farther away but on the surface. But if the submarines had tried to submerge the seaplanes would have been right on top of them with their bombs the moment the crew left the deck, and so both must almost certainly have been sunk.

It was only possible for those submarines to remain on the surface and fight because their commanders knew that all surface craft in that sea-area must belong to the Allied Navies, so here again one sees how the command of the surface of the sea operates against enemy aircraft and in favour of the Allies' submarines. The point is well worth studying, for it is one which affects very considerably our whole future Naval policy. Therefore one again points out that for perfect co-operation between submarines, surface craft, and sea-going aircraft, or super-marines—to use the handier and more logical term—the personnel of all three branches ought to belong to one and the same Service, in our particular case, the Royal Navy.

German Seaplane Activities.

This recent attack by seaplanes on submarines, and also official stories of battles far out at sea between our big flying-boats and superior numbers of German seaplanes draw attention to the fact that the Germans have during the present Summer shown remarkable activity with their seaplanes. Their chief idea apparently is to dispute the right of way of our airships and our big flying-boats in the air on the German side of the North Sea, and also to interfere with our surface traffic, both warships and commercial convoys, in the narrow waters opposite the Belgian coast, say from Dover to Yarmouth.

It is, in fact, a year or more since one or two German seaplanes dropped torpedoes at ships off our coasts, so it is rather surprising that the German Naval Air Service has not done more to justify its existence. But, even if the R.N.A.S. were still in being, and if Naval aviation were not a secondary consideration as compared with the needs of the Army and of the Independent Air Force, it would not be surprising that the warnings of last year were neglected. Such is our national custom, and such it has been from time immemorial.

Despite warnings from our enemies, and despite warnings from our own people who have specialised on particular subjects, our successive mis-Governments make it part of their political creed to be wise after the event. Our only consolation is that our far-seeing specialists always have the means at hand to counter the moves of our enemies, when they are at last called upon to do so. And the present occasion is no exception to the rule.

Apparently the means by which the Germans are making themselves a nuisance are small, very fast biplanes which come out in fine weather and sit quietly on the surface of the water in flocks, waiting for something to come along, and wasting no petrol while they wait. One hears also of still faster hydro-monoplanes which behave extraordinarily well in the air.

If well-armed surface craft come along they simply fly away and squat somewhere else. If merchant vessels or slow aircraft appear they proceed to attack. So far as can be gathered they have done no serious damage, beyond the losses of certain seaplanes which have been duly recorded officially. But their activities show what is to be expected if their future developments are not anticipated.

Our Obvious Reply.

The obvious reply to such tactics is faster and better-armed seaplanes, or aeroplanes launched from ships something in the manner which may be found discussed in this paper any time from 1912 onwards at fairly frequent intervals.

These fast seaplanes exist, and have existed for quite a long time, despite a tendency in certain quarters to decry the utility of such craft. It is merely a question of producing them in quantities. These machines would naturally operate from coast stations along the narrow waters, and would pursue tactics very similar to those of the enemy's machines. Study of the enemy's habits should make it fairly easy to discover where and when



"THE HOPE."
(Without Apologies to the late G. F. Watts, R.A.)

the German seaplanes are most likely to be found, so that little or no petrol need be wasted in cruising around looking for them. At any rate there would be no need for the whole fighting flotilla to waste time in scouting.

As regards machines launched from ships, here again the advantage of holding the command of the surface of the sea is evident, for our aeroplane carriers can certainly operate without much more danger than was incurred by the seaplane carriers which raided the German naval establishments at Cuxhavn and Wilhelmshavn and Langeoog so far back as Christmas Day of 1914. If these flotillas of German fighting seaplanes are allowed to infest the North Sea without interference it means that our submarines, and airships, and long-distance patrol seaplanes must be hampered in their work, even though they may not be prevented from doing it. If, on the other hand, the Hun aviator is cleared off the sea as effectually, in comparison, as he is cleared out of the air in France by the R.F.C., then the serious work of our sea-scouting for submarines and warships and minelayers can proceed without hindrance.

Serving Three Masters.

With all the good will in the world the Royal Air Force cannot serve three masters. It cannot do justice to the Fleet, the Army, and the Independent Air Force. One or other must be the more important in the estimation of those in high places. Whereas if the Admiralty ran its own Air Service and the Army had its Flying Corps, all three would start level.

Quite apart from which, depending entirely on a single line of technical departments—design, production, inspection, and supply—for all three branches of the R.A.F. seems very much like trying to feed three armies at the head of one line of rails. If there is a break or a hold-up anywhere on that line all the armies starve. Whereas, if there are several lines and one breaks down, the others can supply everybody. Which is precisely what happened early in the war, when the R.F.C. was able to supply certain machines and engines to the R.N.A.S., and when, later on, the R.N.A.S. returned the compliment by giving quantities of its best machines and engines to the R.F.C. after the Army had been badly let down by its technical departments.

Our Lines of Defence.

Three heads are better than one, and three sets of technical departments would be better than one, if only because all three could not possibly make the same mistakes at the same time. Each would be a valuable insurance policy against the other two.

Meantime, sea power is still, as ever in history, our final line of defence, and sea power to-day is inextricably mixed with air power over the sea. Our first line of defence is the power of our Independent Air Force over an enemy's country. Our second line is the British Army in a foreign country—whether an Ally's or an enemy's.

But at the finish we come back to sea power. And sea power, together with so much of air power as is directly concerned therewith, is the affair of the British Navy, under the Lords Commissioners of the Admiralty, to whom may Allah give his blessing and the intelligence to appreciate the importance not only of the sea, but of all the tinnemies as well.—C. G. G.

DOWN BY PARACHUTE: A PERSONAL EXPERIENCE.

Last week there were described in this paper some experiments made with ballasted parachutes dropped from an aeroplane, and the possibilities of the use of these appliances for life-saving in case of accident, and especially in case of fire, were mentioned.

Since then a public demonstration has been held when a jump was made by a human being. Perhaps the simplest way of recording the event is in the words of the subject of the experiment.

The individual in question has no connection with the firm which makes the parachutes, and he volunteered to do a jump in the absence of the regular exponent simply because he was convinced that the Guardian Angel parachute is perfectly safe in its operation, and that it should be widely adopted on aeroplanes at home and abroad as a safeguard.

The victim describes his experiences as follows:—"At sundry times when making passenger flights a curious desire had entered my mind to get out of the machine and walk. The cause of this feeling was probably the effect of that strange lack of the impression of height which everyone experiences when watching the ground from an aeroplane.

"After viewing experiments in dropping from aeroplanes weights attached to the Calthrop parachute, on which occasions the action of the apparatus from start to finish seemed to work with the precision and accuracy of a well-oiled machine, the gratification of this desire seemed not only practicable, but perfectly rational, if only the consent of the proprietors could be obtained.

"Permission was very kindly granted, and after a test-drop was made with a dead weight, I assumed the all-embracing harness, which distributes the load well over the body, and clambered into the passenger's seat.

"A natural dislike to flying in windy, bump weather was tempered by my confidence in the ability of the pilot, Captain Payze, who has a splendid record of safe, consistent piloting.

"The arrangement was that the pilot should get his height, approach the aerodrome from leeward, and that I should jump out when we were fairly over the landing ground.

"In due course, we approached the scene of operations, and the pilot nodded to me to get out of the cockpit and walk along the footboard to the trailing edge of the wing, and await his signal to drop. Here I squatted with my legs dangling over the edge of the wing, watching the pilot's face. After about half a minute, he nodded hard, and smiled encouragingly, and I slid off the plane with eyes shut, awaiting events.

"I could feel no drop: the noise of the motor faded away, and the first sensation was a violent tugging at my left arm. Opening my eyes, I found that the bridle cord had got twisted round my arm, which was entirely my own fault for jumping with the cord under my armpit, instead of over my shoulder.

"This mishap did not, and could not, affect the opening of the parachute, and its only effect was to deprive me of the sensation of the clean fall of my weight into the harness.

"The resistance to progress downwards created by the parachute was most comforting, and it was possible to look round at the scenery, where, down below, could be seen tiny figures running to the point where the parachute seemed likely to land.

"The act of alighting was surprisingly gentle, despite the high wind, and the use of the quick release lever quickly detached the dragging parachute from my body.

"The drop was notable for the absence of any sensation of violence, and I was therefore greatly surprised to be assured on alighting that during the seconds of voluntary blindness I had turned head over heels in the air, probably as the result of catching my arm. From start to finish the descent was far less uncomfortable than the ride in the wind-rocked aeroplane.

"As a result of the jump I feel even more strongly that the parachute should be a standing fitment to every aeroplane."

The opinion of one who has eaten the proverbial pudding is to say the least of it deserving of consideration, and the fact that he has expressed his willingness to make another jump proves that the sensation cannot be so terrible as some people seem to imagine. It is particularly worthy of note that the experimenter left the machine when it was only at a height of 400 feet from the ground, and that the parachute was fully open after dropping less than 100 feet.—W. L. W.

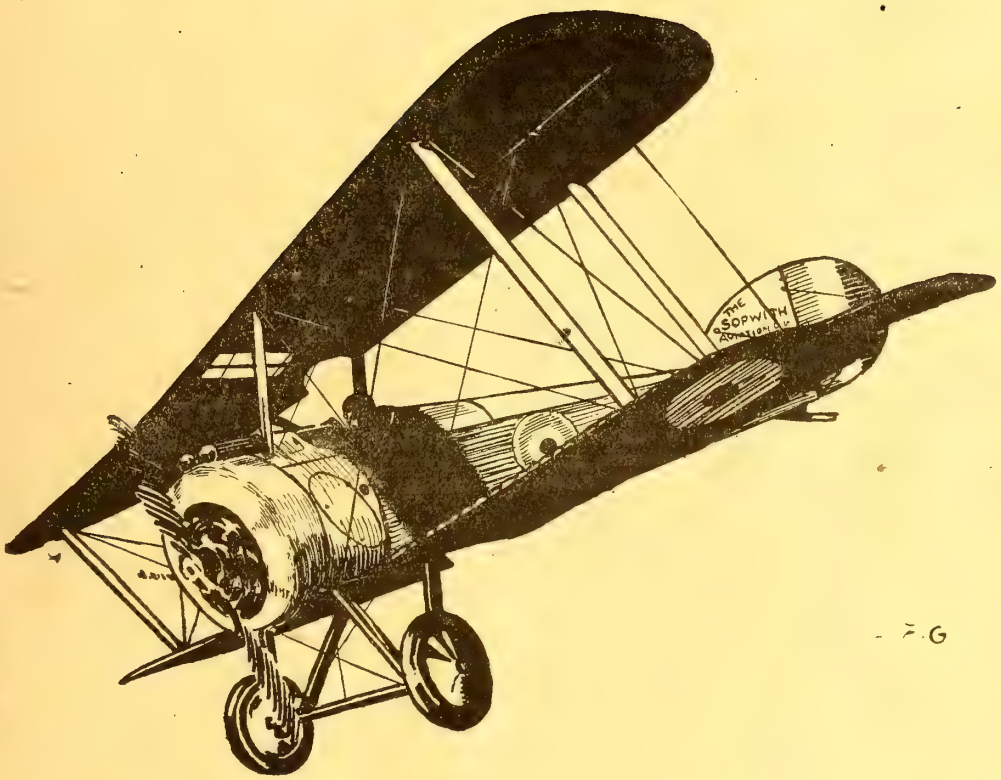
JAPANESE AERONAUTICS.

The "Times" correspondent writes from Tokyo on July 9th:

It is widely recognised in view of the achievements of the aviators in France and Italy that the Japanese Air Service is deficient. A movement has been lately started to combine existing associations for the furtherance of aviation. To-day the Prime Minister was a guest at a luncheon with Baron Sakatani and General Nagaoka, the respective vice-presidents of the Imperial and National Aviation Associations, and a large company of bankers and other men of affairs, who met in order to form a combined national association to secure the widest financial help for an effort to raise aviation in Japan to the level of other countries.

The Prime Minister in his speech compared the present military usages and achievements with those of the Franco-Prussian War, which he witnessed as attaché.

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ENTIRELY ABOUT BOOKS.

THE BOCHE-CHASERS.

If you have ever rejoiced over the richly encrusted poetic prose of "M. de C." in that unforgettable tale of Mr. Kipling's, "The Bonds of Discipline," you will be glad to know that a talented Frenchman, M. Jacques Mortane, has done for aviation what Kipling's inimitable creation did for the Senior British Service.

From the rather pathetic little dedication, "To those whom war has ravished from me," to the "Table of Matters" at the end, M. Mortane's book, "Chasseurs de Boches," is a pure joy. Not for him the stereotyped baldidude of the official communiqué: "An enemy machine was brought down," but rather thus, with the swift, bold strokes of a Steinlen: "The Boche descends in eddies virtiginous, sickening; to fall at length on the hill-side, bumping like a rabbit!"

This is not sober diction, perhaps, but it paints a picture. It is a shock to you, after the orderly ineptitude of our own chroniclers. To write, as M. Mortane does, for the love of the thing, in a rush, with exclamation points running across the page in serried rows, like telegraph posts, may make the insular mind wince a bit at first; but once you have the measure of the man you will know that he is no "*fumiste*" (untranslatable word, unless you accept the homely British "swankpot" as an equivalent), but an informed enthusiast.

When occasion requires it, he can be terse and grave; yet the felicitous adjective, the "mot juste," is always at the point of his pen.

Perhaps he is his own best spokesman; one quotes:—

"To be a good chasing pilot you must do a deal of flying. Certain ones imagine that it is only necessary to flit after Boches to find them. A folly! To discover the insect suffices not; you must force it to accept the encounter. The atmosphere is not precisely the Place de la Concorde, and he who would flee can do it in all security if he has a little lead on you. Some there are who succeed at once, but them I envy not, for thereby they acquire a confidence which may be prejudicial to their future.

"Thus speaks one who has proved the truth of this:—'It was no ordinary adversary by whom I was attacked. My Boche was a three-seater armed with two machine-guns placed at the back. Take my word for it that they worked with a will! How my Baby Nieuport got the better of this flying barrack, I know not, I! Nor can I tell how it was that the explosive bullet which shaved my eye failed to blind, in spite of the traces that it left. How such a David could scatter this Goliath in space is past my telling—but this I know, the intense joy, the voluptuous intoxication that filled me when I saw the vast machine descending, open, burst into a rose of flame, and crumble into space.'

"He had no luck, that client!"

Though sparkling, and so eminently readable, the volume is orderly, and crammed with information. Into the dry bones of officially presented fact he has breathed the life of his Gallic wit, and from every page a telling phrase flashes out at you.

"A Few Notes on the Career of an Incendiary of Sausages" opens promisingly: "As the shuddering puppy that has erred, so waits the kite balloon tremulously at the end of its string!"

Then this flexible stylist has occasion to speak of the death of a friend: "An incendiary ball wrenched him from us who loved him, as though the Fates were jealous of one who had so often mocked them."

A brief account of a bombardment: "We are enabled to discover them by the denunciatory light shed by the dirty muzzles of their guns, which for a moment or two rend the veil beneath which they carry on their work of the devil. My motor is running like a million tops. We are bang up against the sky, so high that I am minded of Marius of Marseilles, who took, they tell us, his repasts in a hall so low that he could only eat soles. We arrive with a fanfare chez Fritz, whose anti-aircraft guns surround us prodigally with little onions.

"In the twinkling of an eye the sky around is alive with the little grey tufts of the 77 and the big yellow tufts of the 105. Such flowers! Sinister orchids! We fly above a floor of snowballs. A pity that the sky is growing grey: what an effect it would make on a blue background! Despite the spitting of the raging mouths, we approach to close the beak of their satanic battery. A mental exhortation to my brave Caudron to be prudent, and we slip down gently. A sudden hail of steel makes of my right wing a sieve. Varnished only for this time, my observer and I have had the luck to encase nothing. We return homewards with all the legs."

One only wishes that one had the space to quote some more of these delectable tales, particularly the more vivid one of the Adjudant Maxime Lenoir, but, after all, you need the book on your shelf, and for three francs fifty, plus the "majoration temporaire" of fivepence that the publishers (L'Edition Française Illustrée, of Paris) announce, it is yours, and certainly your reference shelf is not complete without it.

One must congratulate this sprightly colleague on the production of a volume which is not only informative, but fresh and vigorous, and which cloaks encyclopædic knowledge with a gay gallantry akin to Dumas.—R. H. B.

AS THEY SEE THEMSELVES.

Long, long ago an affable old gentleman named Samuel Sterne wrote a rather sultry little book of stories, which opened with these words: "They order," said I, "this matter better in France."

Lesser scribes have misquoted him ever since, but the trope is pat enough, and the new book "*Les As peints par Eux-mêmes*" ("The Aces painted by Themselves") which M. Mortane has just brought out is streets ahead of anything so far published over here dealing with "the ham-stringing of the Boche," as the writer aptly terms it.

Our clever scribe has lost none of his verve, and as a hors-d'œuvre let me whet your appetite with some of the titles: "In the Meshes of the Enemy!" "The Broken Tibia!!" "A Flight with a Dead One!!!" and, Oh! sacred little pigs! how should it be translated, "*L'Obus de Plein Fouet*," "the lash of the shell"?—no, it simply cannot be done in English!

But, before I say a word more, let me correct a possible impression that M. Mortane is a Charles Garvice of the air. Nothing of the sort. He does not take his pleasures sadly; he gives you information and circumstantial detail in measure brimming over; but it is no part of his duty to be dull, he is liberal with the *sauce piquante*, and the dish is improved thereby. If I had a criticism to make it would be to suggest to M. Mortane that he should staunch his rivers of gore, which flow a thought prodigally through the pages; but it would be ungracious to dwell on this note, when one is debtor for so much entertainment.

Now for a sample of his quality (accepting in advance my excuses for the pallid rendition of his sprightly Parisian argot):—

"Seeing an Albatros alight on my ground, I launch myself, the revolver menacing, while crying 'Rendez-vous!'

"From the bottom of the nacelle a calm voice replies to me: 'When thou hast completed thy noise?'

"It was a pilot of my escadrille, and for a surprise this was unexpected. Two hours before he had started on a Morané, and now on an Albatros! How had he made the exchange en route?

"'Voyons! thy Morane?' said I with severity. 'Explain then a little what thou hast done with thy Morane?'

"'Ah, ça,' replied he, 'I hope thou wilt not (unmentionable word) me, for I come from escaping finely!'

"More and ever more intrigued, I say to him half jestingly: 'I bet that thou hast landed in Bochie!' 'Nothing less, my old,' he rejoins. 'A chic subject for a citation: Having landed in enemy territory did not hesitate to possess himself of an enemy machine, with which he returned to our lines.'

"'Thou hast done that?'

"'As I tell thee!'

"The desire invades me to fall upon his neck! I take his two hands, and pressing them with emotion of the most intense: 'But it is chic, that, recount a little!'

"'Willingly. Over P. le M—— my motor stutters, no ordinary misfire; passages of nothingness, the aspirations of water in lieu of petrol. *Panne sèche!* No chance. I have to land in Bochie. All in descending I see clearly the tents, the hangars, the automobiles, an apparatus out of its shed; I am astonished at not being cannoned. The Boches are asleep then, by hazard? Bah! say I, best to be marooned among people of the same metier. I roll on to the enemy aerodrome; I pull up within twenty metres of his tents, resigned to play my little Vercingetorix before Cæsar!

"'But Cæsar was absent. Personne!'

"'One would think oneself in the desert,' says my faithful mecano. No one arrives, and I decide myself to burn the cuckoo (set fire to his own 'bus), when my companion, a master rascal, sees an Albatros similar to that which I piloted a month ago, at R——. I observe the *avion*. It is, in effect, a P.S. 110. 'Ah, the jolly hasard!' say I; 'see if it has petrol.'

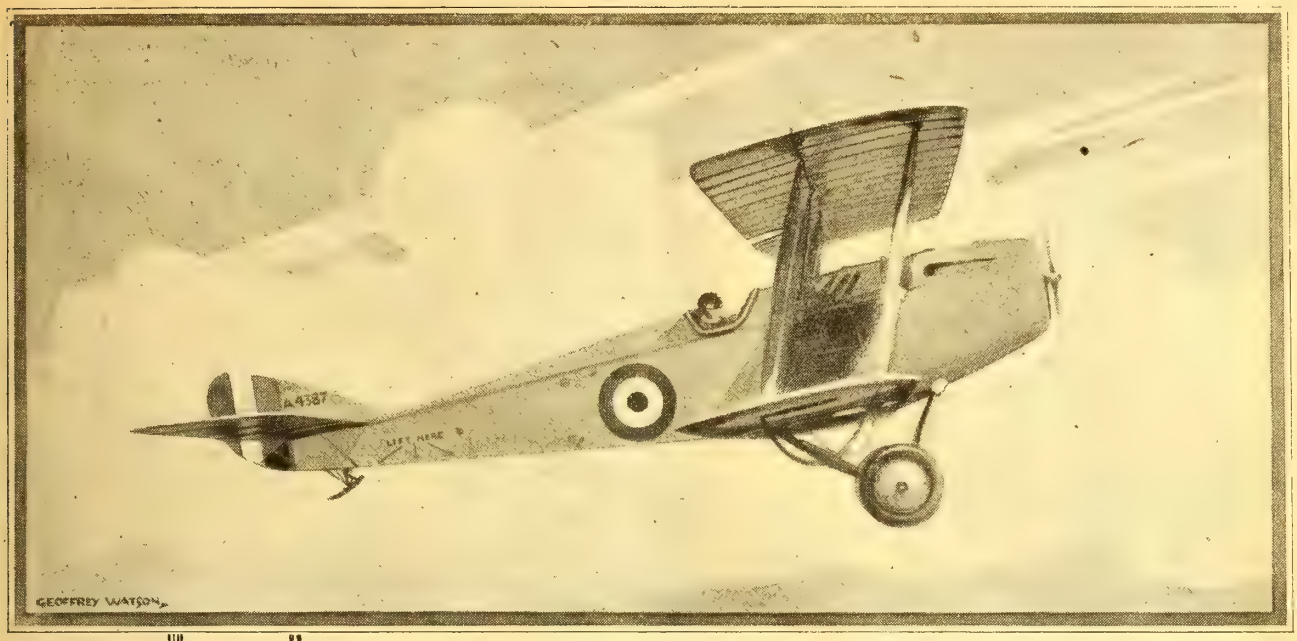
"Two rifle barrels debouch behind the tents and cover us. Pan! I lower one with my revolver. Thou knowest the Albatros has a self-starter, it functions to the marvel. We lift!!!

"'It was time, and already they dust my ears characteristically with ball! I look below, and see my poor Morane at the mercy of the barbarians. There are incendiary bombs aboard; at the risk of demolishment I make a half-turn, and at a feeble altitude drop the lot. A terrible fusillade ensues'—he showed me the pendant rags of linen on the ailerons. 'But I had the bitter satisfaction of seeing a jet of flames elevate itself among the scattered soldiery!'"

This line ends the recital: "Capitaine-Aviator Jolain (dead on the field of honour)."

I only wish there were paper enough to set out Capt. Daucourt's account of his bombardment of Essen, or others from a rich store; but must close with a tiny vignette from the last story:—

"Here am I returning on the dirty Boche, whom I shall only leave with his four paws in the air. She has given me enough to do the (anything but lady), three cuckoos and a comrade to avenge. I loosen on him a drum, precise, richly nourished. As a flaming torch he drops; below the Boches scatter like





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frightened rabbits. Ah, le beau spectacle! The beast is dead. We taste the infinite joy of a triumphal return. The setting sun wings grey clouds to us, that we in our flight brush lightly, reflections of purple and gold. A wave to the French battery, un petit looping as a sign of joy, and we slip down to our nest."

There is a proverb, I think it is Basque, that says: "The fool goes to bed early to save candles, and thereby begets children." If you neglect to get this book you will lack knowledge you should have, and moreover will have missed a splendid entertainment.—R. H. B.

WINGED WARFARE.

Major Bishop's new book—"Winged Warfare" (Hodder and Stoughton. 6s.)—is a fighting man's story, ably told; and not a mere literary meringue. It is so quietly good that it stands in no need of superlatives. If the writer had not become a star-turn fighting pilot, he would have been an excellent newspaper man, for he has that peculiar capacity for evoking and sustaining interest that you associate with skilled and experienced writers. He has a real and vivid sense of humour (as distinct from a sense of fun, which so often passes muster for it).

Something of the character of the man, too, has crept into the book; he is delightfully unassuming. Just listen to this from a V.C., D.S.O., D.C.M., with several score victories to his credit:—

"I belong to the steady flyers' class, but some day soon I am really going to learn to fly, to do aerial acrobatics, and everything." He writes this artless little phrase in perfectly good faith, apropos the clever "stunt" work of a friend of his. And he who has done so much has written three hundred and one pages without an egotistical or boasting word in them.

At the outset of the war Bishop came over in an old-time cattle boat, and we accept without reserve his statement that 700 sea-sick horses are not the most congenial steamer company. He and the gay adventurers with him were devoured by fear that the war might be over before they had managed to get mixed up in it. (An apprehension that later events have proved groundless.)

He served as a cavalryman, but a long and intimate acquaintance with the mud of Flanders bored him to tears. His heart was already in the clouds, and the propitious fates saw to it that a born pilot was not cheated of his destiny. He secured his transfer, and worked hard as an observer.

It is pleasant, too, to see a lone-hand fighter paying a graceful tribute to the fine work (albeit unspectacular, from the "Daily Mirror" vantage-point) of the observers as a whole. "They take enormous risks, and seldom get any of the glory. The men in the Corps recognise and appreciate the quality of their work, but the public at large rarely hears of them. The feats of the fighting planes from the spectacular and fascinating side of flying, but in a sense the daily drudgery of the observers, the photographers, and the bombers, is of even greater value."

He was soon put through his pilot's course, and the instructor told him that he was "ham-handed." His first solo sticks in his memory with the awful clarity that this experience usually assumes; that rather obtrusive ambulance in the corner of the field, and the perfect landing that he made—"only forty feet too high."

He gives us an eerie little picture of night-flying: "I turned the machine to face down the long line of lights, opened out the engine, raced along the ground, then plunged up into utter blackness. I held the controls very carefully, and kept my eyes glued on the instruments that gleamed brightly under little electric bulbs. I could not see a thing around me; only the stars overhead. Underneath there was a great black void. After flying several minutes I summoned up courage enough to make a turn. . . . Once or twice there was a slight kick in the rhythm of the engine. No matter how many cylinders you have in front of you, the instant one misses, your heart hears it before your ears do. Several times my heart seemed to stop. The tension became very great as I toiled and struggled up through the night. The lack of anything upon which I could put my eyes outside the machine gave me a very queer feeling."

It was not long before he was in France with a squadron, bringing up the rear, and feeling scared when he got out of formation. "The way I clung to my companions that day reminded me of some little child hanging to its mother's skirts while crossing a crowded street."

His prayers for "good hunting" were rewarded, and one day he encountered three aircraft, Huns, with the black crosses on their planes, evidently trying to work a surprise.

"I could hardly realise that these were real, live, hostile machines. I was fascinated by them, and wanted to circle about and have a good look at them." But he turned to fight, and there follows a delightfully boyish account of a dizzy, headlong swoop, a running fight at 200 miles an hour with a wily and experienced Boche: "I had forgotten caution and everything else in my wild and overwhelming desire to destroy this thing that for the time being represented all of Germany to me." He plunged wrathfully, spitting bullets the while, in a wild dive, the engine full on, but the Hun fell ever faster. "I never appreciated the significance of the word 'crashed' until then," he says.

But in his haste to annihilate the enemy his engine had filled up with oil, and only the standing luck of the British Army persuaded the sated machine to sputter into life again—just in time.

Experience came to him in generous measure, and you can fancy him—"laughing at gales, and sitting on a 40-mile wind." With a quaint charm he tells us little tales about the plucky thing the other fellow did.

The book is set with little gems of word-pictures, the "portly" German observation balloons swaying in the wind; the lad three weeks from England, a bullet having exploded in his stomach, struggling home to die and tell what he had seen; the Boche "head-hunter" seeking easy prey; the sinister "flaming onions"—"travelling just too fast to make it possible to dodge them"; an engine failure in enemy territory, and his resolve to strike a tree with one wing at the moment of landing, thus damaging the machine so that it would be of little use to them; the apologetic kick of one cylinder 15 feet off the ground, the reluctant assent of the other eight—and heigh! away again!

And then the delightful impudence of his squadron commander out on an afternoon stroll, who wandered above the Hun lines upside-down, for devilment, and in the hope of attracting a "head-hunter."

He speaks of the infantry, from above, "wandering across No-Man's land and into the enemy trenches as if the battle was a great bore to them." "It looked from the air as if they did not realise they were at war, and were taking it entirely too quietly." Flights in a storm, when without warning his little Nieuport would be lifted a hundred feet into the air, and later dropped that distance, and often more; till the effort of holding her up drenched him in perspiration, for all the cold. The gorgeous assurance with which he used his unsuspecting Major as a piece of bait for prudent Huns seeking a long-odds show; a fight at four miles altitude, with breath coming quickly and the heart racing. . . .

Also a scrap one day, when he was out with a patrol of six, and a lone German, whom they had suspected of shyness—"turned in a flash, and came head-on into the six of us, opening fire with two guns." To their blank amazement and disgust the German got away with it, and seems to have singed them pretty handsomely.

"He must have been a very fine pilot and a very brave man, for he put up a wonderful fight, and I have not the slightest hesitation in saying he probably enjoyed it much more than we did."

He had the time of his life, did this slim young man, till they sent him home to be decorated, and one of his boots began to squeak in the Royal presence. "It was a terrible moment for all of us," he says, very soberly.

The inconsequential gallantry of the book mirrors the writer, and draws the heart. Buy it.—R. H. B.

INTO AND OUT OF GERMANY.

In one of the two decent existing tales of the sea ("Bartimeus" wrote the other), the unforgettable Emmanuel Pycroft (clad in frock coat and pure brass spurs) adjures Mr. Rudyard Kipling to "buy an 'am and see life." I do not suppose that cubist production, your meat card, permits of your getting an 'am, but if you want to see life, you may safely spend a crown on Mr. Pat O'Brien's engaging volume, "Outwitting the Hun." The said Pat O'Brien being a full Lieut., R.F.C., and now R.A.F.

You will probably see it about on the bookstalls, and lest the photo of the aggressively genial individual on the cover (who resembles the O'Brien not at all) should deter you, let me state that the book is a perfect rollick; the story, easily and wittily told, of a remarkably hefty piece of work.

"This devil of a Gascon" (it was said of d'Artagnan, but it fits our hero) was engaged in one of those scraps that his soul loved over the German lines. He winged his man, and, then—"while I was looking at the instruments, the whole blamed works disappeared. A burst of bullets went into the instrument board, and blew it to smithereens, another bullet went through my upper lip, came out of the roof of my mouth, and lodged in my throat, and the next thing I knew was when I came to in a German hospital the following morning at five o'clock, German time."

This man had as many lives as a cat, a Kilkenny cat for preference. They patched him up in a sort of a way, and sent him to the officer's prison at Courtrai, sobered, but by no means chastened. Food was scarce, but our friend had prehensile ways "it seemed to me that it would be a simple matter to pretend to be tired on one of our walks, and sit down when we came to the first potato patch. It worked out nicely . . . and each of us

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managed to get a potato or two. Being Irish, I got six." Precisely!

Some louring Hun decided to send O'Brien to a reprisal camp in Germany. The train accommodation was so filthy that a protest was put up, citing the treatment accorded to German officers in England. The only reply was—"If I had my way, you'd ride with the hogs!" To which our Hotspur—"That would be a damned sight better than riding with the Germans!"

Bored with inanition, O'Brien decided to make a jump for it while the train was running at 35 miles an hour. He opened the window under the pretext that the compartment was stuffy. The stolid Landstürmer in charge of him made no objection. Then he swung himself up by the luggage rack, and tumbled out. Badly mauled, he was still able to run, holding the tail of his coat to catch the blood as it fell, and avoid leaving tell-tale traces.

The sight of one eye temporarily gone, battered and half starved, knowing no word of the language, dependent for his direction on a saturated map (stolen) and the kindly ministrations of the North Star (to which his book is dedicated) he staggered through Germany into Luxemburg, knowing every man's hand against him. At this time, he avows, "even a snake would have been companionable."

When food was even more terribly scarce than usual it was his practice to enter a cottage with a large stone knotted into his handkerchief, which he swung airily as an inducement to hospitality, and point to his mouth, leaving by a direction opposite to that which he was really following. Here and there, when he entered Belgian territory, he was shown kindness, and I like him for saying that "when the war is over, I shall make it my duty to find those kind Belgians, whose names I dare not mention now, and in some way recompense them, if I have to go through again what I have suffered already."

It is his considered opinion that the Germans have planned their food supply in connection with their resources for several years to come, and "there isn't the slightest doubt in my mind that they can last for years, and the worst of it is that they are quite cocksure about it."

O'Brien had a certain acquisitiveness, so it is not surprising that he managed to cull from odd clothes lines sufficient garments to replace his British uniform, hitherto hidden by an overcoat. By cold, calculating bluff he got into a guarded Belgian town, secured at a price a forged passport, and walked about, a gentleman at large.

A German flag flaunted outside headquarters made him go hot—"I would have given ten years of my life to have stolen it." His wounds were mending, and he was no longer dependent for sustenance upon the beet, or the unrewarding raw potato.

He carried his delicious impertinence so far as to visit a free moving picture show, ordering a bock (the only word he could pronounce) under the aquiline nose of a German officer. Huddled among a group of travelling Belgians, he got clear of the town, as he judged a change of air imperative.

His last meal in Belgium was provided by a kindly peasant woman. Broken as he was, he must still have had a way with him, for she gave him two pieces of Belgian lace, worked with the words "*Charité*" and "*Esperance*." Knowing no French, it was not till later that he found out the kindly intent, but, although "having as much use for Belgian lace at that time as an elephant has for a safety razor," he took the little gift.

He came to the Dutch frontier, and the 10-foot fence, electrically charged, flanked on each side by a high barbed wire hedge, the three of them straddling over a breadth of 12 feet. (To say nothing of the prowling sentries.) He got through, but if I told you how he got through, it would spoil the tale for you. And he went back under the last barbed wire to recover something he had dropped—the tiny roll of Belgian lace!

In Holland they fêted him, and after a few more vicissitudes—for his Gods seem to dread that he might have a dull moment—he faced what was for him the worst ordeal of all—a command audience of the King of England. What starvation, stalking danger, and privation had not been able to accomplish, the apprehension of this interview wrought in him, and he seems to have been reduced to a quaking jelly. But he was soon set at his ease, and talked breezily for nearly an hour—an unusual privilege.

And now, from his little home in Momence, Illinois, this daredevil of an Irishman (for he is always Irish through his Americanisms), looks quietly back at it all, and writes it down for us. But, if I am not the more mistaken, before many months he will be weary of the lectures, and the chairman's eulogies, and the cheques, and the flattery, and will be out again, his coat invitingly trailed, seeking trouble!—R. H. B.

SHORT FLIGHTS.

. . . . "a beautiful quarto-page, where a neat rivulet of text shall meander through a meadow of margin."

Though, mind you, Sheridan had not read "Short Flights with the Cloud Cavalry." Indeed, it is unfortunate that there should be "but one halfpennyworth of bread to this intolerable deal of sack"; and when first I opened this book, which the publishers have generously interleaved with blank pages, I fancied I had mistakenly caught hold of one of the estimable Messrs. Boot's diaries!

Moreover, it was ungenerous of the pseudonymous author, "Spin," not to let us have a little more for our five shillings; a maiden effort, too. Perhaps it was judicious in him, though, to leave his public with an appetite!

This is a much better book than the pre-digested productions dealing with aviation that are so often foisted on us. The writer has the meat of the matter in him, he can tell a yarn, and he is by way of being a craftsman. A certain felicity of wording, an unforced sense of humour (oh, rarest of all birds) with a succinct style.

He has paid his public the compliment of writing carefully, but he is never laboured. And, moreover, small but important point, he has not overlooked the psychology of names. The great Honoré de Balzac used to prowl all Paris looking at shop facias for names to fit his characters, but in these days of facile writing for cursory reading few take such trouble.

And now, for a sample, let me give you "Bumps!" one of this little reel of bright motion pictures, for you cannot call them stories, so slight they are:—

"Are you ready, Parker?" said the General, with a faint note of regret, as he surveyed the débris of an immodest repast.

The A.D.C. at once busied himself with cap, wraps, and stick. "Is the car ready, Parker?" "Yes, sir." "You know, Parker," the General continued facetiously, "it may be the last time we'll have the opportunity of using it." Parker gave a harsh duty laugh and shuddered involuntarily. The General, rejuvenated by the Spring air, had decided to experience his first flight. A few minutes later the heavy car glided softly to a throbbing standstill on the edge of a very large aerodrome. "Good morning, Major," said the General, stepping heavily out of the car on to the toe of the A.D.C., who winced, but maintained a tactful silence.

After a solemn promenade round the sheds, they come to the machine, swaying slightly in the breeze. The General is ready.

"Right, sir," said the Major, handing him a flying cap and a pair of goggles. "Thank ye—thank ye," said the General, attempting to put the cap on upside down. "Yes, yes, of course. Let's see, now, how do we get in? Eh?"

Two mechanics gently raised him into the seat. "Dear me," said the General, "what a very confined space!" "Contact!" shouted the Major. The engine spluttered and roared, and a farewell epigram, which the General had been thinking out for the last twelve hours, was torn from his breathless lips and hurled away by the whistling draught.

"Flick!" away went the General's goggles. "Here, stop—Hi!" The General thumped the Major's broad back, the engine was throttled down to a murmur, and a panting orderly ran up with the goggles.

"Should I not——" started the General, but again the engine roared out, and the screaming wind killed the epigram before it was born.

Fifteen minutes later the machine landed, and the General, a clutching figure in the back seat, was assisted out.

"Very nice—very nice indeed—most enjoyable. Thanks very much, Major. Yes, afraid I must be going. Goodbye." The door of the car slammed, and the Major raised his hand to the salute. For several minutes the General was very quiet, and the A.D.C. glanced at him out of the corner of a watery eye. "Stop the car," said the General suddenly. The A.D.C., with a fluttering heart tapped the window. The General climbed unsteadily out and walked down the road, his head bowed over the rows of coloured ribbons across his breast. "Damn!" said the General, stopping. "Damn!" he said, as he was sick again.

Now, that is a picture, is it not? Many of us have met that General, or his counterpart. The dialogue throughout is especially good, and now and then a vivid phrase will make the scene stand out with stereoscopic vividness. "Ethelred, the Unready" is the kind of pilot we seem to have met before—there are little kodaks of the bored mess-room, one tackling the English translation of a French novel, another "attempting to make a dishevelled fly loop the loop." Suddenly a 'phone call comes through, they are ordered out, they are aloft, and you are with them, you can see the spit of the bullets, livid blue, you experience "a feeling as if someone had brought a cane hard down an inch from your foot," and you catch your breath as the lad who is harrying the German infantry drifts helplessly down with his engine dead—until he notices the switch that his elbow had knocked up—and "the engine breaks once again into a tremulous roar."

These are no "Eric-or-little-by-little" figures, these young Service men the writer etches for us, nor do they ramp and swear overly much, as do the men in Henri Barbusse's "Le Feu." Our author is never lachrymose: "How I should love to know," murmurs the fond mother, "what the brave lad's thoughts were about!" The brave lad's thoughts were probably more or less after this fashion: "Wish to God I'd shoved on that extra pair of socks." "Where the hell did I put that pencil?" "Lucky fellows, those Inland Water Transport."

This is healthy and true. There is drama enough, that tale of the lad who was afraid of fear, or the vignette of the Scotch

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air mechanic whose man makes the 'drome at last, after they had waited long and anxiously for him :—

"Thompson's breath whistled out in a pent-up sigh of relief. 'Ha'e got a gasper, laddie!' he said, turning to the rigger."

This is restraint, which is the true art. The book is good, so good that we hope the author, when he has felt and seen enough, will let us have another, and a longer one. R. H. B.

PRACTICAL FLYING.

The saying that a book fills a long-felt want has become so common as to attract no attention, but occasionally the expression is justified when the book to which the expression is applied supplies what is wanted.

"Practical Flying," by "A Flight Commander," is an outstanding example of the satisfaction of the demands of its readers; inasmuch as it deals with practical flying in a distinctly practical manner.

This book is graced with a short introduction by Major-General W. S. Brancker, C.M.G., himself a pilot of no mean attainments.

The title-page reveals that the author of the book is Flight-Commander W. G. McMinnies, R.N., and that the excellent illustrations were drawn by Flight-Lieutenant E. L. Ford, R.N., and the combination has resulted in the production of a very admirable and knowledgeable handbook.

"Practical Flying" is addressed to prospective pilots, and particularly to those who wish to become active members of the Royal Air Force. The purpose of the author is to present in terms that can be easily understood a general impression of how flying is taught and learned, and the author hopes that its study will enable the beginners to avoid many of the mistakes commonly made while under instruction.

The theory of why an aeroplane flies is handled very briefly indeed, but much detail is given to explain how an aeroplane is flown, which is an entirely different proposition. There is a very full disquisition on the aeroplane and its engine, and the operation of the controls.

The reader is placed metaphorically in the pupil's seat of an aeroplane and given a thorough course of instruction as to what happens when he operates the different wheels and levers which he finds before him.

As in practical training, the instruction is progressive, and simple flying is handled first of all, followed by a dissertation concerning the use of instruments, map-reading, finding one's bearings, and so forth, and the reader is not told how to start on cross-country flying until this necessary ground-work has been absorbed.

The incidentals of cross-country flying are handled one by one, and the reader learns how to land on strange ground, how to make forced landings, how to make use of the wind when landing, how to make "S" turns, how to re-start from fields, and how to take advantage of meteorological conditions as they exist.

Thereafter, the writer deals with the more spectacular flying, and speaks of vertical banks, spiral descents, nose-diving, horizontal rolling, and so on.

The only criticism which one can offer regarding this section of the book is the very short allusions to some of the more difficult features of flying, and one receives the impression that the author does not always remember that his readers, in most instances, lack practical experience, and would like to have such vital evolutions more fully explained. For instance, the spinning nose-dive, which is so great a bug-bear to the average pupil, is passed over with a very short reference, whereas a whole chapter devoted to its ramifications would be a profitable investment.

Nevertheless, the author has achieved what he claims, namely, to have produced a volume which will give the would-be pilot a practical insight into flying as he will find it. Subsequent editions would be improved by an expansion of the section of advanced flying.

The volume is terminated with a short article on the medical aspect of aviation by Surgeon H. Græme Anderson, R.N., an extremely practical doctor, who thoroughly understands the physical and psychological effects of flying.

A very useful addition is a series of compressed instructions which the pupil would do well to memorise, as they contain some very sound advice which should be followed through the different stages of tuition.

A glossary of terms commonly used in aviation which also appears will instruct the uninitiated reader with the various unfamiliar terms which are used in the book.

One is pleased to recommend "Practical Flying" to the attention of all those who contemplate becoming pilots, and also to many youngsters who have been under instruction for some time, and who have yet more to learn concerning their work.

Copies can be obtained for 5s. 3d., post free, from The Aeroplane and General Publishing Co., Ltd., Rolls House, Breams Buildings, E.C.4. The first edition published at 3s. 9d. is sold out, but the new impression can now be had.—W. L. W.

CAPTAIN BALL, V.C.

A book of considerable interest to the younger enthusiasts for aviation has recently been published under the title of "Captain Ball, V.C." It consists, to a great extent, of the letters written by Capt. Ball to his family while he was learning to fly, and thenceforward to the time of his death.

These letters are, in fact, of great interest to all who desire to study the psychology of the aviator. The rest of the book is made up of matter written by the compilers of the letters, which matter is without offence, though without value, and appears to be the work of painstaking journalists without special knowledge of their subject. Capt. Ball's joyous and boyish letters are worthy of a better setting.

There is a foreword by Mr. Lloyd George—which seems unnecessary—and a brief note on Capt. Ball by Major-General Trenchard, and another by Brig.-General J. F. A. Higgins, both of which are illuminative, despite their extreme brevity.

The following notes on the book which were written by a public school boy who has an intimate knowledge of aviation indicate how it is likely to be regarded by the readers to whom it is most likely to appeal :—

"In 'Captain Ball, V.C.,' I like the first part of the book immensely, and the last part, as far as Ball's letters go. The letters are awfully interesting, especially where one gets the whole or the greater part of them, and it seems a pity that such a number have been cut down and put in in little bits where they happen to chip in with the authors' views—which they don't seem to do very often in the later part of the book.

"All the little notes about Ball's garden and his doings on the ground in such ways, which have obviously received a considerable amount of blue pencil, and still more total exclusion, to my mind, tell one just as much about his life and character as any of the fighting portions, and certainly considerably more than the authors' conceptions of the daily round of the 'heroic British airman.' They apparently don't see that when one has read in the first portion of the book Ball's accounts of his air patrols and the aerial fighting of his time, and then in the second, their ideas on these subjects, one can't fail to notice some slight (?) difference.

"The very end and the very beginning seem wrong, too. The last chapter is chiefly composed of effusions on the part of newspapers concerning a subject of which they know nil, and the book begins with a preface by Lloyd George, who, as one would expect from a Minister who knows nothing about any branch of the Army, makes about the worst mistake in the book. He says that Ball was a true soldier of British Democracy, apparently forgetting that Ball, being in a Royal Regiment of the King's Army, was fighting for his King and Country, and not for Mr. Lloyd George's political aims.

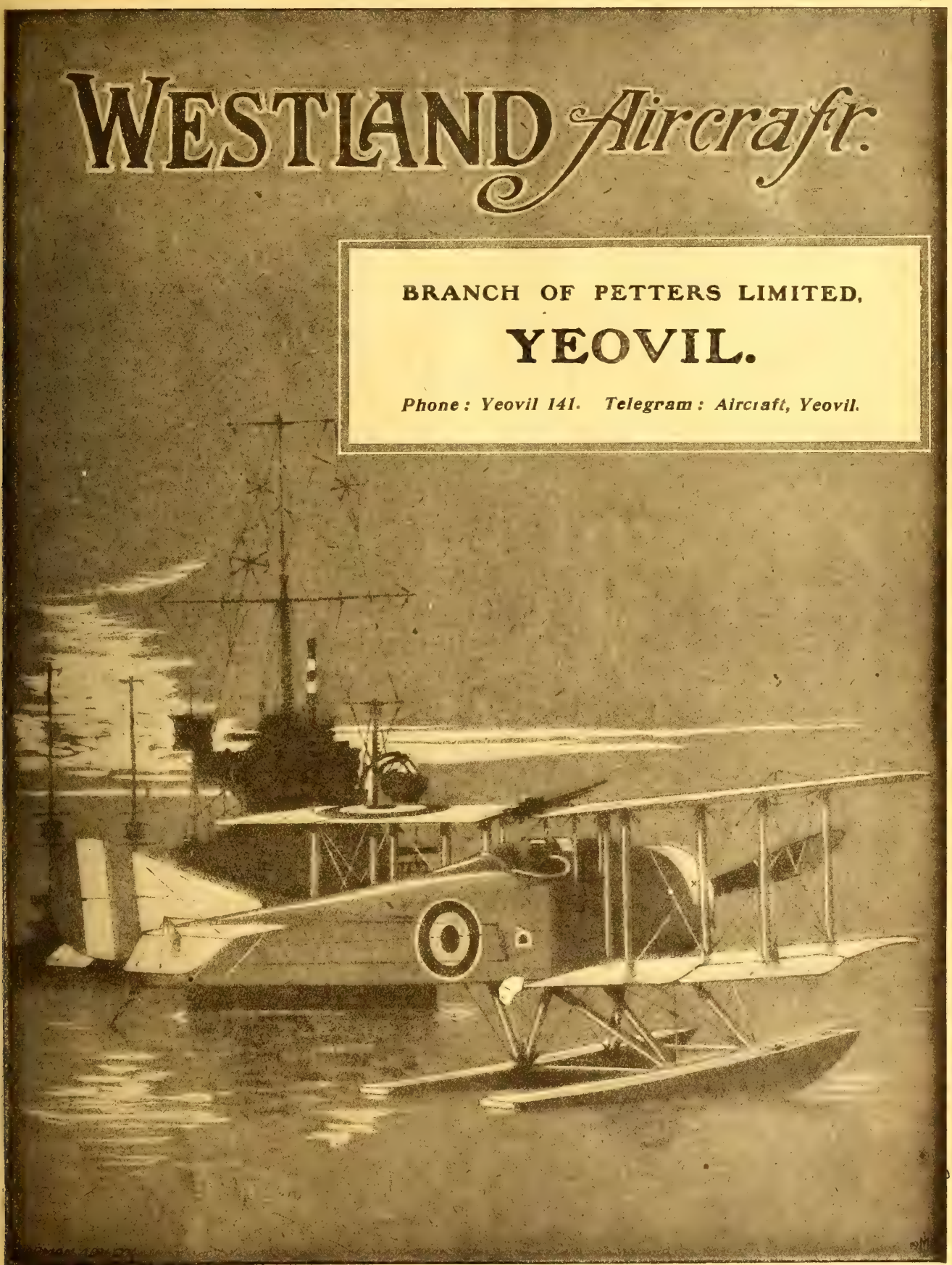
"Seeing that I much prefer criticising a book to expounding its merit, I expect it looks as if I thought it was a rather rotten show on the whole. However, I don't really think so. Taken altogether, to my mind, it is well worth reading.—V.G."

THE USE OF WORDS.

Some weeks ago one drew the attention of readers with literary inclinations to a very fascinating little book of poems by Major the Hon. Maurice Baring, R.A.F., published by Martin Secker, of Adelphi, Strand, W.C.2. Those who appreciated the wonderful use of words in those poems are strongly recommended to study an equally fascinating collection of word pictures issued by B. H. Blackwell, Broad Street, Oxford, at 2s. net. This little book, which consists of short passages of poetry written in prose form, is entitled "Translations Found in a Commonplace Book, edited by S. C."

The editor of these translations states that he has not been able to trace the originals. One would, in fact, be rather surprised if he had been able to trace them, for one is inclined to believe that the brief passages which occupy each page are entirely original, though possibly in some cases analogous to what certain classic authors of prose-poetry might have said if they had thought of them. In certain of the longer passages one seems to see allusions to persons and events which one has known in the present war, for although the language is the language of a thousand or two thousand years ago translated into English—and beautifully chosen English at that—the scenes and the sentiments are those of people who are taking part in this war. There are even certain passages which appear to be allusions to the fallen of the R.F.C., though there is no allusion to flying, and though the author has skilfully eluded anything which even suggests an anachronism. After all, there can have been very little difference between the work on paper of Cæsar's Headquarters Staff in Gaul and Sir Douglas Haig's. The science of war and the joy of life and the splendour of death are eternal.

The following little passage taken from the book is as apposite to-day in any war area as it was in the days of Xenophon or Hannibal :—"Countless flies are buzzing in the stifling tent. Over and over again I con the columns of figures and check the tangled entries about wagons, horses, mules, forage, corn, oats,



KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS

and harness. And far away somewhere men are killing and being killed, and wounded men are dying and calling out in vain for water."

One doubts if ever a better obituary has been written than this :—

"Stricken mortally by the foe, you had but time to smile, then you fell and lay glorious and beautiful in death. And you the mother, and you the father, and you the wife of so peerless a man, bewail the loss, but bewail not his fate; for in order that our inheritance may endure, and that our land may be inviolate, we give the best that we have, and give gladly."

The book is strongly recommended to all seekers after truth in the use of words.—C. G. G.

SOME SONGS.

"This is the very false gallop of verses, why do you infect yourself with them?"—"As You Like It." Act. III., Sc. 2.

You will remember how in the "Bab Ballads" of precious memory they sought for the man who wrote the rhymed mottoes in the Christmas crackers? The secret seems to be out. He must be none other than the author of "A Blind Hero" (National Carol League, 1s. 6d.) It is a pity that words of such incredible banality and ineptitude should have been harnessed to an accompaniment distinctly worthy of better things.

The mawkishness of the verse fascinates me :—

"Eyes right! The fine young figure stood
Erect, the essence of true manhood,
As only Tommy Atkins could.
Eyes right! He went—at Neuve Chapelle
He fought—and the brave hero fell,
But now he's home again—and well!"

I hope you like it? What was it Touchstone said: "I'll rhyme you so eight years together . . . . 'tis the right butter-woman's trot to market"—(if I can trust my memory). The writer's name is mercifully suppressed.

Another composition has reached me—"Eagles of England." (Elkin and Co., 2s.). The music is in strict conformity with two-house-nightly standards. As for the verse, some of the lines betray a sense of prosody and rhyme from which it would seem that Mr. Paul Bewsher is foredoomed to be a poet laureate, for it is in such stanzas that the opening of exhibitions and the advent of royal infants is habitually announced.

Even so, he is a bold man who will rhyme "war" with "roar." Possibly the writer had in mind the precedent established by Mr. Sam Mayo, in that doleful ditty of his—"Do you want us to lose the wore?"

The song is dedicated to the Royal Air Force. It is to be hoped that the "dauntless youth of a dauntless race" will appreciate it.

Strolling past Strohmenger's the other day, an aeronautical person, with severely academic musical tastes (he is believed to think Bach rather flippant), caught sight of a gem of melody, entitled "The Aviator—or, The Mariner of the Clouds," and the following are his remarks thereon :—

"Through skies of grey or skies of gold
"Proudly the Aviator flies, where the mighty breezes blow
"Defying the danger the clouds may hold
"He sings the song of the Pilot bold."
(Chorus "with fury.")
"Fate may be kind, though dangers round me lie,
"I am the aviator, the Mariner of the Sky."

(This last is worthy of the best traditions of the Tootham Hippodrome.)

The song lurches into a minor key to provide the appropriate slaughter-house effects.

"Suddenly! Suddenly!! Look, on high
"Storm clouds are sweeping across the sky
"Struck by a terrible lightning flash.
"See that speck,
"A mangled wreck,
"Falling to earth as the thunders crush!!"

Reserve your plaudits, there is better to come :—

"Wafted aloft on a cloud of gold
"Through the skies into Realms Untold
"Still flies the soul of the Mariner Bold!"
(now unattached.)

Until, without the aid of any oxygen apparatus, he wings—

"Safely to Paradise as the clouds roll by."

This awe-compelling effort is published by Messrs. E. Osborne, and should brighten many a suburban evening for the humble florin.—R. H. B.

[Any of the aforementioned books—not the songs—can be obtained from "The Aeroplane and General Publishing Co., Ltd.," 2, Breams Buildings, E.C.4.]

A RUMOUR WORTH WATCHING.

A neutral correspondent of The Aeroplane writes :—

"It must be forelooked with much interest to what extent the days to come will confirm the rumoured news of a lately German aviation event, to which attention should be paid, namely the report of the first trials of a aeroturbine-powered metal aircraft at the Johannisthal aerodrome.

"The available information has it that the aeroplane is made completely of duralumin, without interplane struts, by the Fokker-Junker new aero works and the power-plant by the A.E.G. concern.

"Concerning figures the maximum speed is given to 255 kilometres, the climbing capacity being stated to be 15,000ft. in 11½ minutes, and the working time of the aero-turbine is said to be unusual long one of 50 hours.

"Should one add any comment at this date a wonder could not be retained that speed trials should have been carried out in circular flight over the Johannisthal aerodrome, instead of over a straight stretch. The figures of climb tell, if true, that the reduction in head resistance by doing away with the struts cannot compensate for the less effective aerofoil of metal planes.

"A confirmation that there is some fact behind these rumoured events is easy to be found by the advertisements during the last six months of the new Junker-Fokker aircraft concern in 'Flugsport' for skilled engineering labour to carry out metal aeroplane work, and some German work in the aero-turbine line has long been commented upon."

A CHAIR OF AVIATION.

The Secretary of State for the Royal Air Force announces that the sum of £25,000 has been placed at the disposal of the Government by Sir Basil Zaharoff, G.B.E., for the purpose of endowing a professorship of aviation.

This munificent donation is in continuation of donations previously made by Sir Basil Zaharoff for the foundation of Chairs of Aviation at the Universities of Paris and Petersburg, in order to assist in the progress of aviation among the Allies, and it is his hope that the occupants will continuously exchange views.

It is proposed that the professorship shall be called the Zaharoff Professorship of Aviation, and that it shall be a professorship of the University of London attached to the Imperial College of Science and Technology.

Sir Basil Zaharoff, who is a Greek by birth, and presumably of Russian, or Balkan Slav, descent, in 1913 presented to France, his country of adoption, 100,000 francs for a Chair of Aviation in the University of Paris.

[One hopes that Sir Basil Zaharoff will not think it necessary to follow a famous precedent and make an illustrated daily aviation paper the necessary sequel to endowing this chair.—Ed.]

FLYING THE ATLANTIC.

The "Daily Mail," with its usual genius for prophesying the obvious, is now reviving its readers' interests in the Trans-Atlantic Flight. It will be recalled that months ago The Aeroplane pointed out that the cheapest way to bring the big American bombers to Europe is to fly them across.

The following are the details of the "Daily Mail" offer as first announced on April 1st, 1913 :—

"We offer £10,000 to the first person who crosses the Atlantic from any point in the United States, Canada, or Newfoundland to any point in Great Britain or Ireland in 72 continuous hours. The flight may be made, of course, either way across the Atlantic.

"This prize is open to pilots of any nationality and machines of foreign as well as British construction.

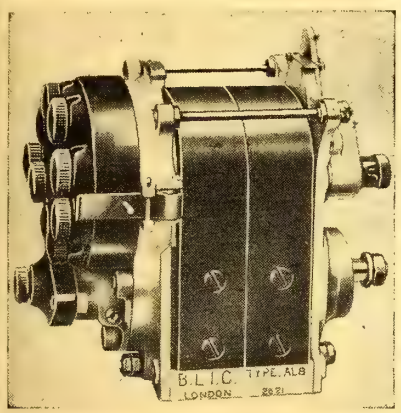
"In order to give an additional impetus to the development of wate-planes and that the prize may be speedily won, we have extended the time to 72 hours, and allow a flight from any point in Newfoundland. The distance from St. John's, Newfoundland, to Valencia Island, Ireland, is about 1,880 miles."

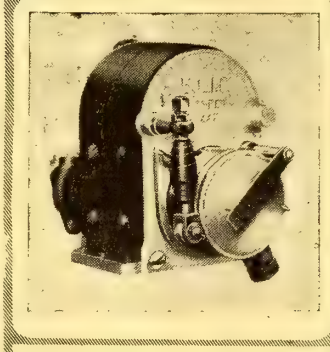
This offer was suspended on the outbreak of war, and is now revived, presumably in view of the fact that more powerful engines and suitable aircraft are now available.

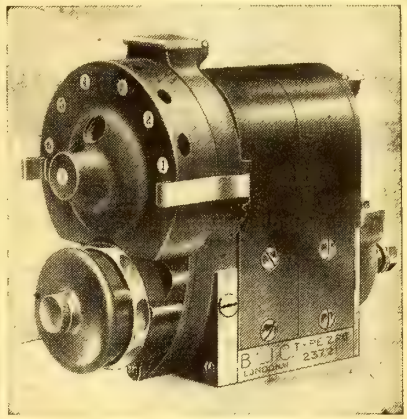
One recognises the "Mail's" sportsmanship in renewing the offer, for it would have been quite within its rights in cancelling the prize on the grounds that it was originally offered to encourage enterprise, and was not intended for people working or flying under Government orders. The interesting point arises as to whether an officer or man of an Allied Air Service would be allowed to accept the prize if he won it. Such permission was refused in the case of the Zeppelin prizes.

The distance from Newfoundland to the Azores is 1,195 miles, and from the Azores to Portugal 850 miles; a total of 2,045 miles. From Newfoundland direct to Ireland is 1,880 miles.

In an interview with a "Mail" reporter, Mr. Handley Page is alleged to have said :—"The 'Daily Mail' £10,000 prize for an aeroplane flight across the Atlantic in 72 hours should be won this year. Before the war, the 'Daily Mail' air prizes supplied the incentive as regarded aeroplane development that the war has supplied since. This £10,000 Transatlantic flight prize is a generous effort on the part of the 'Daily Mail' to help along







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the progress of aviation, and would, no doubt, be of material assistance to an airman who might win the prize, if war conditions allowed individual participation, outside of Government efforts, in such a trial of endurance and efficiency.

"I am certain the flight could be made and the prize won, given our present machines as developed by the war and the experiences of flying for military and naval purposes, if we were not kept so busy manufacturing aeroplanes for war purposes.

"The first attempt to fly from America to Europe will be made from Newfoundland, owing to the contour of the North American Atlantic coast-line. The successful landing will probably be made on the Azores, then Portugal, or possibly direct to Ireland. All aeroplanes nowadays are coming toward France, not going away from it. One of our Handley Page machines, made in America, would not be materially damaged or its fighting value impaired by making the flight from America. All things considered, the £10,000 flight should be made and the prize won in 1918."

AIR FORCE RESULTS.

The following figures of enemy aircraft destroyed by the Royal Air Force were issued in an official report on July 13th :—

Front.	Enemy Aircraft Destroyed.	Driven Down Out of Control.	British Machines Missing.
Western (Battle Front) ..... (July 1, '17—June 30, '18)	2,150	1,083	1,094
Naval Contingents ..... (July 1, '17—June 30, '18)	623	—	92
Italian (April-June, '18)	165	6	13
Salonika (Jan.-June, '18)	21	13	4
Egypt and Palestine ..... (March-June, '18)	26	15	10
Total	2,985	1,117	1,213

The report says :—In aerial warfare, more, perhaps, than in any other branch, there can be no standing still. Having regard to unavoidable war wastage, mere maintenance demands great and unceasing effort. But continuous expansion is what is needed; and that, in conjunction with maintenance, is only possible as the result of uninterrupted co-operation and complete devotion to the end in view on the part of all the multifarious groups of workers of all grades connected with the war in the air.

INTO GERMANY.

The following, which is taken with due acknowledgment from the "Times" newspaper, is the first descriptive, and apparently official, account of one of the bombing raids into Germany, which have become a matter of almost daily occurrence since the Independent Force of the Royal Air Force began its activities :—

Back on the green aerodrome, miles behind the lines, the big British bombers were prepared for their raid. Rows of huge machines stood waiting for the finishing touches, looking, in the twilight, like giant birds roosting on the ground. To one side were the smaller fighting aeroplanes which would escort the raiders on their long flight over German territory. Tanks had already been filled, and now the huge bombs were wheeled out on trollies and fitted to the underside of the planes; belts and drums of ammunition were placed ready for use, and the engines run up to see that all was in order.

A little before dark the pilots and gunners arrived by twos and threes. Each officer carefully examined his particular part of the machine, and one by one the aeroplanes left the ground in the gathering dusk and began at once to climb. Last of all the escorting machines went up.

Mile after mile they flew through the darkness. Below, the faint outlines of fields and roads could be dimly distinguished, with ponds and streams gleaming through the night. They crossed the fighting lines at an immense altitude, untroubled by "Archie" or any other terror of the sky, steadily humming towards the big German town which was that night's objective. After a good two hours' flight a signal flared from the leading machine. The Rhine was at hand, and everyone prepared for action. Guns were fingered tenderly, bomb releases looked to, and sights adjusted.

Then the first searchlight picked up the formation, and a moment later the sky was covered with puffs of smoke; shrapnel shrieked through the air, and long, wavering beams flashed hither and thither to aid the German gunners at their task. Down went the noses of the machines as they dived through the barrage, each pilot intent on keeping his place in the formation and hoping that a stray shot might not reach his engine. The fighters remained on high, waiting for the German aeroplanes which should soon arrive out of the darkness.

Another signal flashed out, and factories and railway station were now within easy range. One by one, and in salvos, the pilots planted their bombs. Muffled roars from below announced the arrival of tons of high explosive; red flashes showed where the explosions took place. At one place a huge sheet of flame shot upwards, tinting half the heavens with a rosy glow. A moment later a louder boom showed the cause of the fire—the main object of the raid had been achieved; the munition factory hit and a conflagration started.

Up to this point the work of the raiders had been simple. Then the German night pilots came on the scene, endeavouring to break up the formation and overpower the bombers singly, instead of attacking them when they were well able to defend themselves. This was precisely the chance which the escorting fighters had waited for. Diving through the night, they fell on their foes, shooting at close range, sending two of the Germans down in flames, to add to the terror of the town below. "Archie," meanwhile, had died away; there was as much danger of hitting friends as of bringing down foes in the wild turmoil which now filled the night.

At last all the bombs were dropped. Several fires glowed in the town, and at least one terrific series of explosions proved that the heart of the target had been reached. The signal to retire was given, and the formation withdrew, whilst the escort acted as a rearguard to drive off any foes who were venturesome enough to follow.

Another terrific storm of shell fire greeted them as they left the town, but no damage was done, and the barrage gradually died down as the machines drew out of range. Westward flew the formation, each aeroplane maintaining its position in line. Overhead the stars glimmered, and nothing now disturbed the peace of the night except the roar of the powerful engines.

When halfway home the leader descried another formation looming out of the darkness. He signalled to his flock to be on the alert, for he did not know whether it would prove to consist of friends or foes. The approaching machines drew closer, and were at last distinguished for bombers, like themselves, bound to the same town which had just suffered, and was to suffer again shortly.

The towns on the Rhine know peace neither by day nor night, now that the R.A.F. Independent Force watches over their welfare. [Would not ill-fare be a more correct word?—Ed.]

INDEPENDENT AIR FORCE RESULTS.

During the month of June no fewer than 74 raids were carried out by the Independent Force, Royal Air Force, over Germany. In all 61¼ tons of bombs were dropped during these raids

It is worthy of note that the British raids over Germany show a continuous increase in number and in weight of bombs dropped upon important military objectives. The previous best month was May last, when 48½ tons of bombs were dropped by the I.A.F.

The following is a list showing the towns raided, the precise military objectives upon which the bombs were discharged, and the number of separate occasions on which each place was raided. This list covers only work of the R.A.F. Independent Force over Germany, apart altogether from the immense weight of bombs dropped by Royal Air Force aviators throughout the Western front and upon such coastal objectives as Ostend, Zeebrugge, Bruges, etc., or the formidable work of the French Air Service :—

Place.	Military Objective.	No. of times raided.
Ars-sur-Moselle (south-west of Metz)	Station	1
Boulay (Bolchen)	Aerodrome	6
Coblenz	Factories, station, barracks	1
Dillingen	Factories, station	4
Frescaty	Aerodrome	2
Hagenau	Aerodrome	2
Hagendingen	Factories, station, sidings	3
Karlsruhe	Railway establishment, explosive factories	4
Karthaus	Station, railways	3
Landau	Barracks and Aerodrome	2
Luxemburg	Railway sidings	1
Mannheim	Chemical factory	4
Metz-Sablon	Station, railway triangle, sidings	18
Offenburg	Engine sheds and barracks	1
Rémilly	Railway junction	1
Saarbrücken	Factories, sidings, station, workshops	5
Thionville (Diedenhofen)	Station, sidings, railway workshops	12
Trèves	Station, railways	2
Wadgassen (north-west of Saarbrücken)	Blast furnaces	1
Zweibrücken	Station and railway workshops	1

A SERIOUS MATTER.

Despite the most exhaustive inquiries, the Brighton Police have been unable to discover an aviator who was flying over the town on the afternoon of July 8th, and from whose machine a sandbag fell out, killing George Ralph Sinder, builder's foreman. Another sandbag fell through the roof of a house close by.

Mr. Bush, the coroner, said it did not seem to him that any military purpose could be served in "looping the loop" over towns like Brighton. Something should be done to stop the practice unless it was absolutely necessary for military reasons.

[Again one emphasises the idiocy of stunting over towns.—Ed.]

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AIR SERVICE UNIFORM.

Major Baird, replying, on July 11th, to Lt.-Col. Sir F. Hall (U., Dulwich), said that the introduction of the new uniform for the Royal Air Force was decided upon by the Air Council after the fullest consideration of all the factors involved. No additional labour would be required, and no loss of material was involved, as all khaki uniforms would either be worn out before being replaced, or would be cleaned and repaired and returned to the Army for re-issue. No additional cost was involved to the State, as the new uniform costs less than the uniform hitherto worn by the Royal Naval Air Service and the Royal Flying Corps. Officers would only be called upon to provide themselves with the new uniforms when those which they were at present wearing became worn out, and no compulsion would be exercised to make them get them earlier.

[One would like to ask further, whether it is a fact that this cloth was made for the Russian Army?

Whether, in consequence of Russia's treachery, vast quantities have been left on our hands?

Whether it is fitting that the R.A.F. should be compelled to wear Russia's cast-off material?

Whether the cloth is of inferior quality, being a kind of cotton gabardine instead of wool?

Whether the tailors are having to pay some 30s. per yard for it?

Whether its pre-war price would have been more than 4s. 6d. per yard?

Whether it is not more suitable for women's dresses of the cheaper sort than for officer's uniforms?

Whether it can only be bought from certain wholesale firms and why?

Who is making the huge profits accruing to somebody or other from this deal?—Ed.]

THE QUESTION OF CHEVRONS.

On July 15th **Major Baird** informed Capt. Ganzoni that the question of wearing service chevrons was very carefully considered by the Air Council, and it was decided that they should not be allowed, as in the Royal Air Force the general conditions were such that service abroad need not involve more risk and discomfort than service at home. Pilots and observers wore distinctive badges, and would continue to do so.

A ROYAL CROSS-CHANNEL FLIGHT.

Earl Curzon, speaking on July 10th at the Albert Hall Concert, said that the King and Queen of the Belgians in their anxiety to be present on the memorable occasion of the Silver Wedding of King George and Queen Mary had flown over to this country—the first King and Queen to descend upon our coast from the skies.

The "Times" supplements the statement made by Earl Curzon regarding the crossing of the Channel by air by the King and Queen of the Belgians. When their Majesties decided to visit London to offer their personal congratulations to King George and Queen Mary on the occasion of their Silver Wedding they elected to make the crossing by air. This was by no means the first occasion on which either the King or the Queen had made a flight, but it is the first recorded case of any King or Queen, or, as far as is known, any Royal personage, crossing the Channel in this fashion. [What about Princess Lowenstein-Wertheim, who flew the Channel with the late Mr. Diag?—Ed.] Two seaplanes were selected for the occasion, each capable of carrying one passenger. King Albert took his place in the passenger's seat of one of the seaplanes, and the Queen in that of the other machine. The cross-Channel flight was accomplished without incident of any kind, and the travellers landed near an English port, where motor-cars were in waiting. Their Majesties proceeded by road to London, where they were heartily congratulated on their safe arrival after so novel an experience.

So much is the account of the "Times." Subsequently it became known that the King and Queen had flown back again, at the end of their holiday, their pilots being Belgian aviators. Those who were in touch with the R.N.A.S. in the early days of the war know that King Albert has always taken the keenest interest in aviation, and that for the past three years he and his charming Queen have been frequent passengers in aeroplanes. The Queen used to be particularly fond of going up in the bigger machines and taking photographs of the surrounding country.

THE EFFECTS OF DOPING.

According to the opinion of a Government specialist, non-poisonous dopes, which have been substituted for the poisonous aeroplane dope formerly used, are more nauseating in smell and taste than the old.

Mr. W. S. Smith, Inspector for Dangerous Trades, in a report, says that the standard of ventilation was raised to meet objections of the workers, and in one works it was found to be as high as 125 changes of air per hour. An investigation as to the blood condition of dope-room workers in three factories in the London area showed that a mild degree of anæmia exists among them, but is of no practical importance except as an indication that any relaxation of regulations might be accompanied by cases of serious illness.

[Nevertheless, the average person would prefer to be nauseated by a non-poisonous rather than to be made the subject of an inquest by a definitely poisonous one.—Ed.]

"MUSIC IN THE AIR."

A band of the Royal Air Force played before the King in the forecourt of Buckingham Palace at midday on July 12th. The bandsmen wore the new blue-grey uniform of the Force, with round, peaked caps and puttees of the same colour, the only distinctive marking being a lyre badge below the wing badge on the upper arm.

The King was keenly interested in the band and in the efforts of which it is the first fruits for the encouragement of music in the Air Force.

The band, which was recruited in the last fortnight from one of the R.A.F. depôts, is the first of several which it is hoped to establish in various units as part of a larger scheme for the organisation of music, both choral and instrumental, among the men of the Air Service. Maj. Walford Davies, organist of the Temple Church, has been appointed organising director of the music of the R.A.F., and under his direction choirs are being started in a number of units.

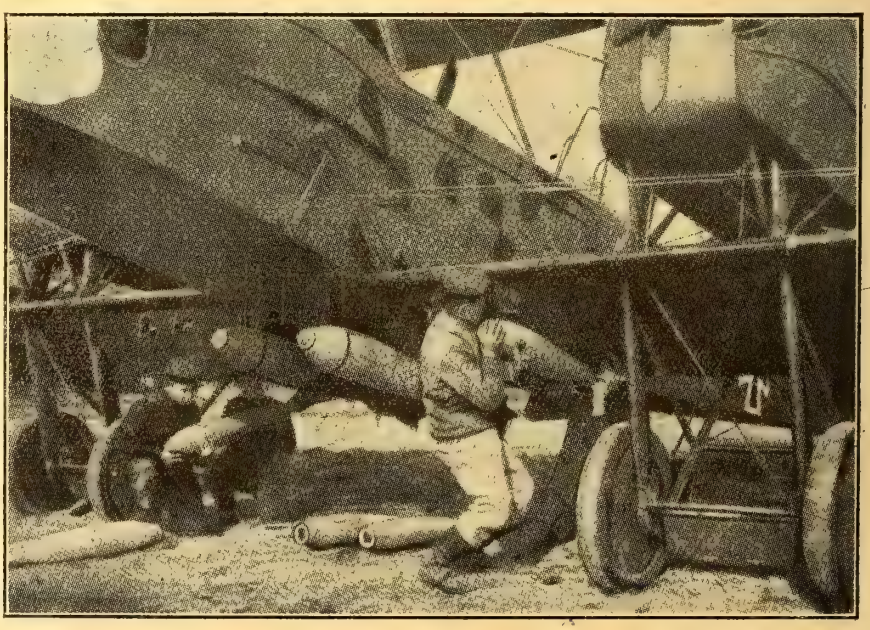
An R.A.F. School of Music has been formed in London, with Capt. Claud Powell as Officer Commanding. Special attention is being given to the formation of glee clubs, and, pending the completion of an R.A.F. Song Book, which is now in preparation, small books of part songs and other songs have been issued by the Air Ministry.

[One is glad to learn that despite their gaudy new uniforms the men of the R.A.F. will be birds of songs as well as of plumage.—Ed.]

I.A.F. RESULTS.

The "Daily Telegraph" says:—

Metz has figured so often in British air raid reports that special significance attaches to the testimony of captured documents concerning a recent raid when the gasworks and a number of other important military objectives were heavily bombed. The material results of the raid, the Central News learns, are said to have been kept secret in Germany, but the chief recorded result of the almost daily attacks on Metz can scarcely have been concealed. It is that as a consequence of the repeated British attacks upon the town the civil population has been evacuated to Luxemburg. More striking testimony to the persistence and striking power of the Royal Air Force can hardly be imagined.



Loading up a German twin-engined bomber.



NAVAL & MILITARY AERONAUTICS



GEOFFREY WATSON

FROM THE "LONDON GAZETTE."

WAR OFFICE, July 5th.

With reference to the awards conferred as announced in the "London Gazette" dated February 4th, 1918, the following are the statements of service for which the decorations were conferred:

THE MILITARY CROSS.

Temp. Sec. Lt. A. M. KINNEAR, Gen. List and R.F.C.

He carried out a successful contact patrol at a low altitude. He was attacked by six enemy machines, his observer was wounded, and his elevator controls on one side were shot through, but he succeeded in driving off the enemy and returned with very valuable information. On the next day he carried out a contact patrol in very difficult weather at a low altitude, and under heavy rifle and machine-gun fire. Though he was wounded in the head and both his petrol tanks were shot through he succeeded in bringing his machine back to our lines. He has frequently obtained valuable information in most difficult weather, and has shown the greatest determination and initiative.

Lt. R. F. S. MAUDUIT, D.G. and R.F.C.

He carried out a most valuable single-machine reconnaissance at a height of 500ft., searching enemy roads and railways and obtaining important information. On another occasion, while on a photographic reconnaissance, he encountered 20 hostile scouts and drove down two of them out of control. He has destroyed 10 enemy machines, and shown the greatest determination at his work.

Lt. (temp. Capt.) V. A. H. ROBESON, R.F.C., Spec. Res.

In the course of three flights, which he carried out in one day in very bad weather, he bombed an enemy battery and fired 250 rounds on it from his machine-gun and bombed and fired on enemy infantry. He also carried out a valuable reconnaissance. On the following day, in the course of two flights he attacked enemy infantry with bombs and machine-gun fire. He showed the greatest skill, courage, and judgment.

Sec. Lt. (Temp. Capt.) W. W. ROGERS, R.F.C., Spec. Res.

For conspicuous gallantry and devotion to duty in shooting down seven enemy aeroplanes, and on two occasions attacking enemy troops with machine-gun fire from very low altitudes. He proved himself a daring patrol leader.

Lt. (temp. Capt.) V. A. H. ROBERTSON, R.F.C., Spec. Res.

He formed one of a patrol which silenced an enemy battery. He dropped bombs on two of the guns, silenced others with his machine-gun and then engaged transport on a road. This operation was carried out under heavy fire and very difficult weather conditions. On another occasion he dropped bombs and fired 300 rounds on enemy trenches from a height of 100ft. His machine was then hit by a shell and crashed in front of our advanced position. He reached the front line, and while there saw another of our machines brought down. He went to the assistance of the pilot, who was badly wounded, extricated him under heavy fire and brought him to safety. He showed splendid courage and initiative.

Temp. Capt. W. H. N. SHAKESPEARE, R.F.C.

He carried out a most successful contact patrol in very bad weather at a height of 400ft. and brought back very valuable information. Later, he carried out another successful contact patrol at a low altitude, his machine being subject to intense rifle and machine-gun fire. He is a gallant and determined pilot and has set a fine example to his squadron.

Sec. Lt. L. E. SHAW-LAWRENCE, E. Kent R., and R.F.C.

He carried out 13 successful contact patrols and reconnaissances, many of them at a very low altitude and in very bad weather under heavy rifle and machine-gun fire. On one occasion during an enemy attack he carried out three patrols in one day at a low altitude under heavy fire and brought back valuable information. In the course of one patrol he attacked a large party of the enemy from a height of 100ft. and dispersed them with machine-gun fire. He showed the greatest determination and initiative.

Temp. Sec. Lt. (temp. Capt.) J. A. SLATER, Gen. List and R.F.C.

When returning from a patrol he attacked enemy infantry, silenced a field gun, and fired on transport. On another occasion he silenced a battery in very difficult weather conditions, fired on ammunition wagons, and enemy infantry, and brought back his patrol safely. He also led a patrol of 12 machines in very bad weather to attack a wood held by the enemy. His patrol dropped over 30 bombs, fired 3,000 rounds, and drove the enemy from the wood with heavy casualties. In the course of this flight six enemy scouts were engaged and driven off. Later, he led a similar patrol with great success. He showed splendid courage and determination

AUSTRALIAN IMPERIAL FORCES

Lt. L. H. HOLDEN, F.C.

While on a special mission he dropped a bomb direct on a support trench full of the enemy, causing them to scatter, and another bomb upon a strong point which was holding up our advance. He also bombed a large group of enemy infantry and turned his machine-gun on them from a height of 100ft. He rendered very valuable service throughout the operations.

Lt. R. W. HOWARD, F.C.

While separated from his patrol owing to thick mist he drove down an enemy aeroplane out of control. He then engaged a hostile two-seater, which he forced to land in our lines. On another occasion, though attacked at a height of 400ft by an enemy two-seater, he manœuvred, shot the observer, and caused the hostile machine to land, apparently in difficulties, but intact. He has consistently done excellent work at very low altitudes.

Lt. F. G. HUXLEY, F.C.

He dropped a bomb upon a gun which was being moved to the rear, damaging it and killing three horses, and another bomb on a wagon, which was blown over, two of the personnel and one of the horses being killed. He then engaged a body of 300 troops marching along a road, and scattered them, causing 14 casualties. Later, having disorganised a large advance party of enemy infantry with bombs and machine-gun fire, he shot down an enemy scout. He is a very keen and daring pilot.

Capt. R. C. PHILLIPPS, F.C.

He has performed continuous gallant work at very low altitudes in almost impossible weather. Whilst flying alone in a mist he forced an enemy aeroplane to land. On two occasions, flying at an altitude of 200ft., he made very valuable reconnaissances, and his reports on the general situation were of the greatest value. His leadership is excellent, and he has set a high example to his flight.

Lt. H. TAYLOR, F.C.

Whilst he was engaging enemy troops his machine was shot down and crashed in the open. On crawling out of his machine he was fired upon by enemy snipers, whom he engaged with a rifle, which he had picked up. He eventually made his way back to one of our patrols, carrying a badly wounded man whom he had discovered on the way. On a later occasion, when flying at 1,500 feet, he engaged an enemy two-seater, which dived steeply to the ground and crashed. He is a clever and daring pilot, and is always ready to perform any kind of duty.

Lt. (temp. Capt.) G. C. WILSON, F.C.

His work at low altitudes under very adverse conditions has been of the greatest value. On one occasion he scattered the enemy from a strong point with his machine-gun. On another occasion he bombed and fired upon a field gun, killing two gunners. Despite the constant attacks of enemy scouts he held his formation together, which was out on a bombing raid, and enabled it to drop all its bombs on the objectives, an enemy aeroplane being also driven down. His dashing leadership has been a splendid example to his flight.

WAR OFFICE, July 9th

REGULAR FORCES.—ESTABLISHMENTS.—MIL. WING.—SCHOOLS OF INSTRN.—SCHOOLS OF MIL. AERONAUTICS.—The follg. appt. is made:—Examining Officer.—Graded as an Equipt. Officer, 1st Cl.—Temp. Capt. F. H. Beer, Gen. List, from an Examining Officer (graded as a Flt. Comdr.), March 1st.

Gen. List.—Capt. G. L. Blaine, S. Afr. Inf., to be temp. Capt., Jan. 15th.

To be temp. Sec. Lts.:—Actg. Serjt. R. McL. Dunn, from R. Highrs., Feb. 13th; Flt. Serjt. C. C. Gissing, from R.F.C., Feb. 19th; Spr. R. R. E. Dimmick, from R.E., March 2nd; Pte. A. G. Buff, from Norf. R.; Serjt. H. W. Petter, from R.A., March 10th.

AIR MINISTRY, July 9th.

R.A.F.—The follg. temp. appts. are made at the Air Ministry:—

Staff Officers, 1st Cl.—Capt. (temp. Maj.) C. A. J. Butter, and to be temp. Lt.-Col. whilst so empld., vice Lt.-Col. R. C. Donaldson-Hudson, D.S.O., June 19th; T. B. Wood, C.M.G. (Col. in Army), and is granted a temp. commn. as Lt.-Col. (Hon. Col.), June 22nd.

Staff Officer, 2nd Cl.—And to be temp. Maj. whilst so empld., if not already holding that rank:—Maj. G. P. Myers, April 1st.

H. E. Rudkin (Maj., R. Ir. R.), and is granted a temp. commn. as Maj., vice Capt. T. F. G. Strubell, June 26th (P.); Capt. (temp. Maj.) R. S. Lindsell, Lt. (temp. Capt.) J. E. B. Thornely, June 25th.

Staff Officers, 3rd Cl.—Lt. R. E. Johnson, vice Lt. (temp. Maj.) J. E. B. Thornely, June 25th; Lt. H. J. Eller, and to be temp. Capt. whilst so empld., July 10th.

The follg. temp. appts. are made:—

Group Comdr.—Lt.-Col. (temp. Brig.-Gen.) H. P. Smyth-Osbourne, and to retain his rank whilst so empld., July 3rd.

Col. (Equipt.)—Maj. (temp. Lt.-Col.) R. H. Austin-Sparks, and to be temp. Col. whilst so empld., July 3rd.

Staff Officers, 1st Cl.—And to be temp. Lt.-Cols. whilst so empld. if not already holding that rank:—(Air.) Capt. (temp. Maj.) G. M. G., Visct. Maidstone, April 15th; Maj. (temp. Lt.-Col.) Hon. J. D. Boyle, D.S.O., April 18th; Maj. H. A. R. Aubrey, M.C., May 5th.

Staff Officers, 2nd Cl.—H. Campbell, D.S.O. (Lt.-Col. in Army, T.F.), and is granted a temp. commn. as Lt.-Col., April 1st, substituted for notification in "Gazette," May 3rd; E. W. Simpson (Capt., Arg. and Suthd. Highrs., T.F.), and is granted a temp. commn as Capt., and to be temp. Maj. whilst so empld., April 11th, substituted for notification in "Gazette," May 3rd.

Staff Officers, 3rd Cl.—Capt. H. de B. C. Garfit, May 11th; (P.) Lt. A. H. Goldie, and to be temp. Capt. whilst so empld., May 16th; (Q.) Lt. (temp. Capt.) F. W. Angus, and to retain his temp. rank whilst so empld., May 1st.

FLYING BRANCH.—Lts. to be temp Capts. whilst empld. as Capts. (A. and S.)—E. C. Johnson, June 16th; J. I. T. Jones, June 19th; B. C. Jones, June 20th; (Hon. Capt.) H. R. de Wilde, June 30th; J. A. Craig, W. C. Gardiner, H. A. Oakes, July 1st.

Lt. (temp. Capt.) C. A. Stevens, M.C., relinquishes the appt. of S.O.3, and retains his temp. rank whilst empld. as Capt. (A. and S.), May 27th.

Lt. (Hon. Capt.) F. R. Sadd to be temp. Capt. whilst empld. as Capt. (K.B.), April 1st.

(*Continued on page 243.*)

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SOME AERONAUTICAL FALLACIES.

By "AFRAES."

This series of articles is not, be it remarked *ab initio*, dedicated to maternal grandparents as a manual of the art of exosculating ova; nor, indeed, is it in any sense designed to divert those superior persons to whom the whole science of aeronautics is as an open book. From information received, however, as well as from personal conversations, the writer is of the opinion that many of those who take a great and close interest in flying matters have fallen into the habit of hugging certain fallacies. These notes are, therefore, committed to paper in the hope that they will disrupt a too amatory embrace.

It is hardly to be doubted that he who seeks to put things right will himself inevitably be found at some occasional fault, and notice is accordingly hereby given to such Algernon Ashtons (no relationship!) as feel constrained to break a lance with me, that as a professional member of the Fourth Estate the Editor is more or less certain to give me the last thrust. Unless they can knock me out in the first round they will accordingly be well advised to keep out of the jousting altogether.—"AFRAES."

FALLACY I.—*That the elevator is simply a rudder in the vertical plane.*

This is a particularly attractive piece of loose thinking. If the rudder be used, as it undeniably is, to veer the nose of an aeroplane from right to left, and the elevator has the effect of veering the nose up and down, then the analogy between the two is as conspicuously obvious as is a statesman in the House of Commons. There can be but few readers of this paper who have not heard Bolo Bertie telling Kingsway Kitty that "he makes it go up and down with a flap at the back just like the rudder of a boat." Even in better informed circles the rudder idea survives, and I have come across accomplished and skilful pilots who could use it (for purposes of imparting information) without a blush.

Now in actual practice an elevator bears only an outward similarity to a rudder. It never seems to occur to the *amateur* that whereas if you keep the rudder (whether it is that of a ship or plane is of no consequence) set over to any angle the vessel will pursue a circular course appropriate to that angle. A similar movement on the part of the elevator will be attended by no such result unless the action be so violent as to cause a loop.

In the ordinary way, if the angle of the elevator be altered during flight the course of the machine, in the vertical plane, that is to say as seen from the side, is changed, but the new path is simply at an angle with the old one and (within reasonable limits) remains more or less straight in itself until a further adjustment of the controls takes place.

The real and essential function of the elevator is first of all to act as a dictator of the speed of the aeroplane. In a secondary capacity, which is immediately dependent upon its first, it acts as an instrument by means of which height and speed can (within reasonable limits) always be interchanged, the one for the other.

The elevator acts as a speed control by virtue of the fact that it enables the angle of incidence of the main planes to be altered by reason of its effect upon the position of the centre of Pressure of the whole machine relative to its centre of gravity.

If an aeroplane is to have a constant *lift*, which is imposed upon it by the fact that it has a constant weight, then this lift can be acquired either by the slow downward deflection (or acceleration) of a large volume of air, or by the rapid acceleration of a smaller quantity of air. When the "joy-stick" is pulled back a little the angle of incidence becomes big, and the first case is brought into existence. When it is put slightly forward from normal the angle of incidence is decreased, and you get the latter case. If, in both cases, the engine is giving only sufficient thrust to overcome the drag of the machine, then it will, in both cases, fly level.

In the generality of aeroplanes, however, on account of the variation in the lift and the drag forces which follow upon changes in the angle of incidence of the main planes, the power required for flying at the lower speed is less than that required for the higher. Hence, if the throttle be maintained at a given opening and the speed reduced by means of the elevator, there will become available a surplus of power over and above that required for horizontal flight.

This excess power, since it is debarred from expressing itself in speed, can only get rid of itself in one other way, namely, by overwhelming the effect of gravity, so causing the aeroplane to climb. On the other hand, if the pilot, by pushing his stick forward, limits the lift of the planes to what is necessary to support the machine in horizontal flight, any surplus power that the engine happens to be giving must result in an increase of speed.

From this it will be immediately perceived that it is only the desirability of having the speed of the machine under the pilot's immediate control that renders an elevator at all necessary. If the air, for instance, were completely uniform and either remained still or were the subject of a perfectly steady wind, you could start, fly, and land an aeroplane without any elevator whatever, for you would simply gain or lose height, according to requirements, by means of the engine throttle. It is, in fact, the throttle only which alters the altitude, providing the flying speed remains constant, and with any definite setting of the elevator the flying speed would remain constant.

Unfortunately, the air is not uniform, and it is the gusts which compose its highly irregular motion that render the aeroplane solely controlled (in the vertical plane) by the throttle an impracticable proposition, although, if my memory serves me right, no less an authority than Mr. Fred Lanchester embodied this very scheme in one of his earlier aeronautic patents.

The effect of a gust is to alter either the relative speed, or the relative flight-path of an aeroplane. This is a matter of comparatively small importance, providing the height be such that there is enough room for the aeroplane to recover from this disturbance; but near the ground it is clear that one must avoid, at all costs, any violent changes in speed, and especially the changes in "attitude" (for Heaven's sake don't confuse this word with altitude, Mr. Printer!) which immediately follow upon them.

It is obvious that if a change of speed occurs as the result of some outside agency, its effect can only be neutralised by an equal and opposite change of speed produced by some artificial means, and it is this means which the elevator provides. It is thus essential to a speed range and to the ability to fly with safety close to the ground.

The only case in which the elevator appears to act as the horizontal rudder is in "zooming" and "looping," the latter, of course, being simply a continuation of the first. This is where its secondary capacity (which, needless to say, is really the same as the first, though it might not, at first glance, seem to be so) comes into action.

Zooming is a manœuvre in which speed is exchanged for height, or, in more scientific words, kinetic energy is transformed into potential, and is exactly analogous to "rushing" a hill on a motor-car. Diving is the converse. Provided an aeroplane is flying at anything faster than its minimum flying speed it can zoom, and if, in these circumstances, the elevator stick be pulled back and held back, the flight-path of the machine will tend to be the arc of a circle.

If the initial speed, that is, the initial energy, be sufficient to overwhelm the fact that at the top of the loop the planes will cease to have any lift, considered as in opposition to gravity, the machine will complete the "circle."

The Design and Construction of Internal Combustion Engines, with special reference to Aero Engines.—XI.

BY C. SYLVESTER.
Author of "The Conversion of Electrical Machinery," "Testing Motors and Motor Starters," etc., etc.

The Magneto.

The magneto may be briefly described as an electro-mechanical device, by means of which a spark is produced across the points of a sparking plug. To the majority of persons, even those closely connected with aero-engines, the design and construction of a magneto is somewhat of a mystery. The general knowledge does not go beyond that of realising that a spark is produced. How it is produced is the mystery.

The magneto, being a very important component part of an aero-engine, it is really most essential that its design and working should be understood. This will be realised when it is taken into consideration that a faulty magneto, especially where single ignition is used, places an engine out of action. Thus, although the fault may be only trivial, it cannot be rectified unless its working is understood.

Magnetic Poles.

In order that the working of a magneto may be understood, it is necessary that the student should know something about electricity and magnetism. In the first place it may be said that a permanent magnet consists of a piece of hardened steel (Tungsten steel is sometimes used) which has been magnetised.

When a piece of steel has been magnetised, it has two poles, north and south, respectively. These poles, which are opposite in what is called "polarity," have magnetic lines of force radiating round their extreme edge. These lines have the power to attract or repel similar magnetic bodies according to the polarity of the bodies.

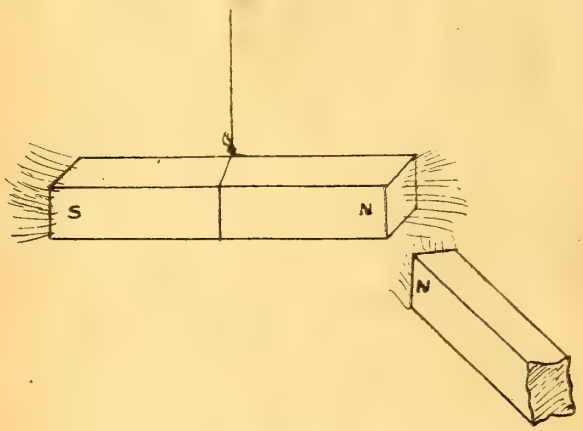


Fig. 28.

An Experiment.

Thus, a north pole will attract a south pole, but it will repel a north pole. This is illustrated in Fig. 28, which shows a permanent magnet suspended in the centre with a piece of cotton. We will suppose that this magnet is not under the influence of the other magnet shown in the sketch, then it will assume a position with its south pole pointing approximately to the north pole of the Meridian.

We will now hold the other magnet as shown in the sketch towards the suspended magnet, with the north pole approaching the north pole. The suspended magnet will immediately turn a complete half-circle until the south pole is pointing towards the north pole.

From this it will be seen that there is power in the lines of force of a permanent magnet, and of this fact advantage is taken in the design of a magneto.

Another Experiment.

It is apparent that although there is power in a permanent magnet it is essential that some means must be adopted to collect this power and convert it into a high tension current. To explain this it is necessary to state that if a coil of wire is moved at right angles across the magnetic pole of a permanent magnet a certain amount of current will be induced into it.

This is shown in Fig. 29 A which illustrates a permanent magnet showing the lines of force, with a ring of wire over them. The ring has been moved in the direction indicated by the dotted lines.

That current is induced in the coil is proved if the experiment illustrated in Fig. 29 B is carried out. Here, a coil of wire is connected in series with a galvanometer. When the coil is moved in the direction indicated by the dotted lines, current is induced into this coil and a deflection is obtained on the galvanometer scale. The direction of the deflection will depend upon which pole of the permanent magnet is near the coil. For our

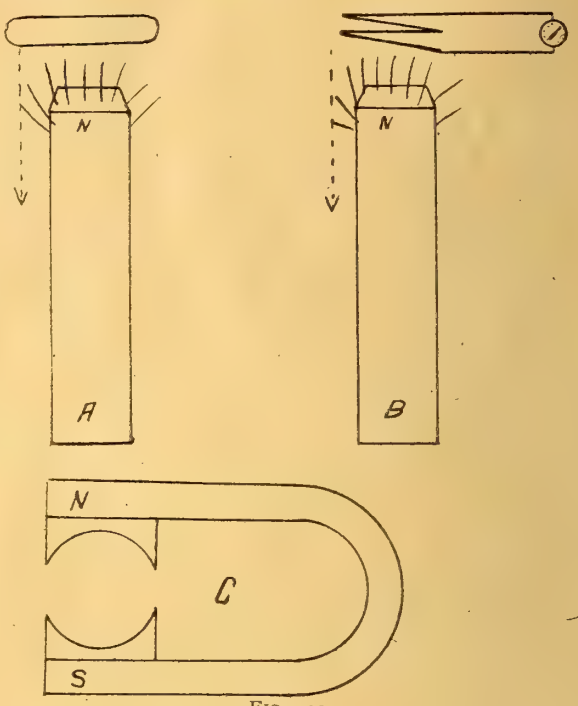


Fig. 29.

purpose, it is not necessary to consider the amount of current induced, the fact that it is induced being quite sufficient.

Magneto Pole Pieces.

The above experiments actually describe what happens in a magneto. Here, the permanent magnet instead of being in the shape of a bar is in the shape of a horse-shoe, Fig. 29 C, with shoes of soft iron fitted on the extreme ends of the pole tips.

The coil of wire, when wound on a soft iron core, is termed the armature. The armature is free to rotate between the poles of the permanent magnet, a spindle and bearings being provided for this purpose.

Armature Construction.

The armature is wound with two distinct coils of wire, known as the primary and secondary coils respectively. The primary coil is composed of a few turns of thick insulated wire, and the secondary consists of a large number of turns of very thin insulated wire.

The primary coil, although a complete winding in itself, has no electrical connection with the secondary. That is, the two coils are completely insulated from each other.

The armature, a cross section of which is illustrated in Fig. 30 A, is built up of very thin sheets of charcoal iron, the object of this being to reduce the eddy current losses as much as possible. In length, the armature is as long as the pole face is wide.

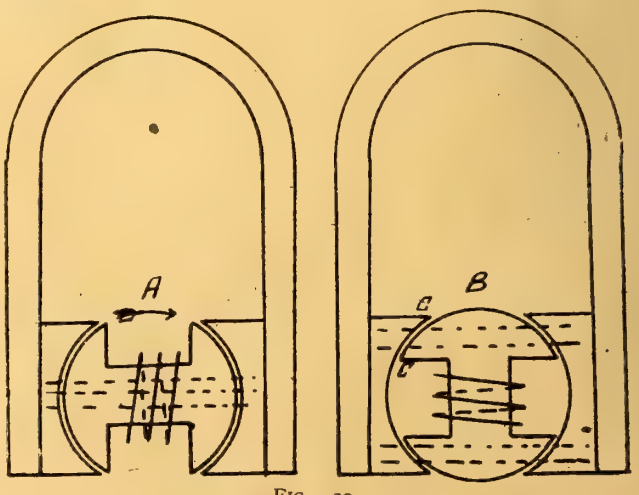


Fig. 30.



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Action of Armature.

In series with the primary winding is a contact known as the make and break contact. Its function is to interrupt the current in the primary winding at predetermined points. To enable this arrangement to be carried out, one end of the primary winding is connected to earth—that is, the metallic portion of the armature. The other end of the winding is connected to a slip ring, fitted on, but insulated from the armature spindle. From this point the connection is carried to the make and break contact.

It is now necessary that Fig. 30, A and B, should be considered. Here we show the pole pieces, armature, and a few turns of the primary winding. We will now presume that the direction of rotation of the armature is as indicated by the arrow. It will be quite clear that as the armature rotates, the lines of force from the permanent magnet will find an easy path from one pole to the other through the soft iron core of the armature. But, it will be observed that the path will vary according to the position of the armature between the pole pieces.

Thus, in A the lines of force will pass through the centre of the soft iron, and so induce current into the primary winding, while at B, the flux has two distinct paths through the extreme edges of the core, but in such a manner that none of the flux is passing through the primary winding.

This being so, there will be no current induced into this coil. In both sketches the lines of force are indicated by the dotted lines.

It is when the armature is between the two positions shown in A and B that the make and break contact comes into operation. To be correct, the correct position of the armature would be when points C and C are opposite to each other.

Here, the maximum current is generated in the primary coil, and, when broken, induces the high tension current into the secondary coil. The make and break contact is operated by cams which open and close the contacts twice each revolution of the armature.

Speed of Magneto.

The speed of a magneto is determined by the number of cylinders in the engine. In a four-cycle engine a series of operations is carried out every two revolutions. Thus in a six-cylinder engine where six plugs are fitted, it would be necessary for the magneto to be driven at one and a half times the engine speed to produce a sequence of sparks at the six plugs.

Magneto Distributors.

The magneto distributor, by means of which the high tension current is conveyed from the secondary winding to the centre distributor, wipe contact, is very well known. From this centre point to the actual distributor contacts, a gap of about .003 in. is allowed. The spark jumps this gap at the same moment that it passes across the points of the sparking plug.

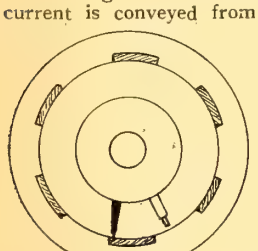


Fig. 31.

Fig. 31 illustrates the distributor, distributor contacts, and the distributor point connected to the hand starting magneto.

Distributor contacts, owing to the high tension current which they have to carry, must be extremely well insulated. The usual method is to fix the contacts, which are made from a good quality gun-metal, in a hard fibre moulding. This moulding is made on the small, and the contacts on the large, side to allow for machining and fitting. They must be an exceedingly good fit and practically damp-proof. Well insulated terminals complete the distributor.

Plug and Magneto Connections.

The connections between the magneto distributor and the sparking plugs consist of well-insulated high-tension wire. One layer of Para rubber next to the wire, one of ordinary rubber, another of Para, and an outside layer of rubber make a very good job. The whole is vulcanised. The thickness of the insulation, from the core to the outside, should not be less than 5/32 in.

The Condenser.

Every magneto is fitted with a condenser. It consists of a number of sheets of tinfoil connected to a common wire on either side. These sheets are laid between, but are insulated from, each other.

The insulation usually consists of thin sheets of paper saturated with paraffin wax. The position of the condenser in a magneto is usually at the end of the armature. The two common wires, referred to above, are connected one to each make-and-break contact.

The function of the condenser is to discharge the inductive spark at the make-and-break contact. If a condenser were not used, this spark would speedily destroy the contacts, although made of platinum. Fig. 32 illustrates the construction of a condenser.

Coil Ignition.

A great deal may be said in favour of and against coil ignition, which system is still partially used on some types of aero-engines. Where this system is in existence, the power for the primary coil is obtained from an accumulator. The rotating portion, that is the cam for actuating the spark gap, and the high-tension distributor are usually connected to a special shaft operated by the crank-shaft.



Fig. 32.

This system of ignition is quite satisfactory providing, of course, that the accumulator is always charged. The uncertainty of the amount of current in an accumulator is the drawback, because, unless one really knows the length of time that the battery has been on charge, it is really guess-work to presume that it will be efficient for any period of time.

A better arrangement, perhaps, would be to have a low voltage generator fitted. There should be no difficulty in designing a machine to give, say, six volts, with a limiting shunt field to control the flux density of the magnetic pole pieces.

Synchronisation of Magnetos.

This is an important item, and care should be taken to ascertain that the two magnetos, where two are used, are perfectly synchronised.

Should it become necessary for any purpose to remove either or both of the magnetos from the engine, special care must be exercised when replacing them. This, of course, will be generally understood, though a word of warning on the point will prevent it being forgotten.

Efficient running can only be obtained with the magnetos properly synchronised, and assuming that the setting of the armature and contact-breaker have not been altered—i.e., that the break in each occurs at the same time—all that remains to be noted before fixing down the magnetos is that the break between the two platinum-tipped screws occurs at the same time on each machine. Fig. 33 illustrates two magnetos connected up to earth switches and hand-starting magneto.

Care of Magnetos.

A few words may be said with advantage concerning their care and maintenance. Lubrication, in this case, is not the first consideration, and one cannot do better than follow the makers' instructions in this respect.

As a rule, when new, a magneto will run for at least one hundred hours without requiring oil. When oil is given it should be applied carefully, that is, a few drops at a time. It is within the writer's knowledge that a magneto, when opened out for inspection, was almost full of oil. No wonder the insulation of the armature was damaged.

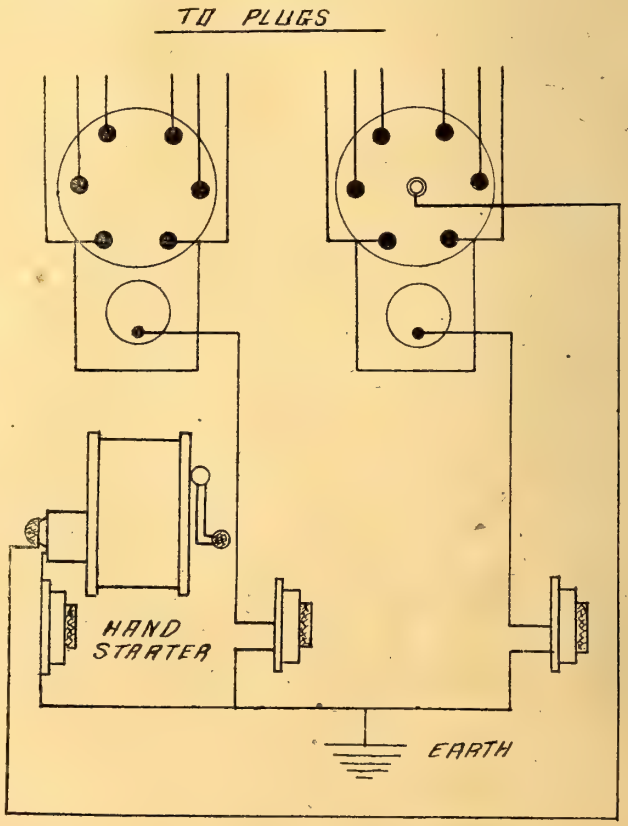
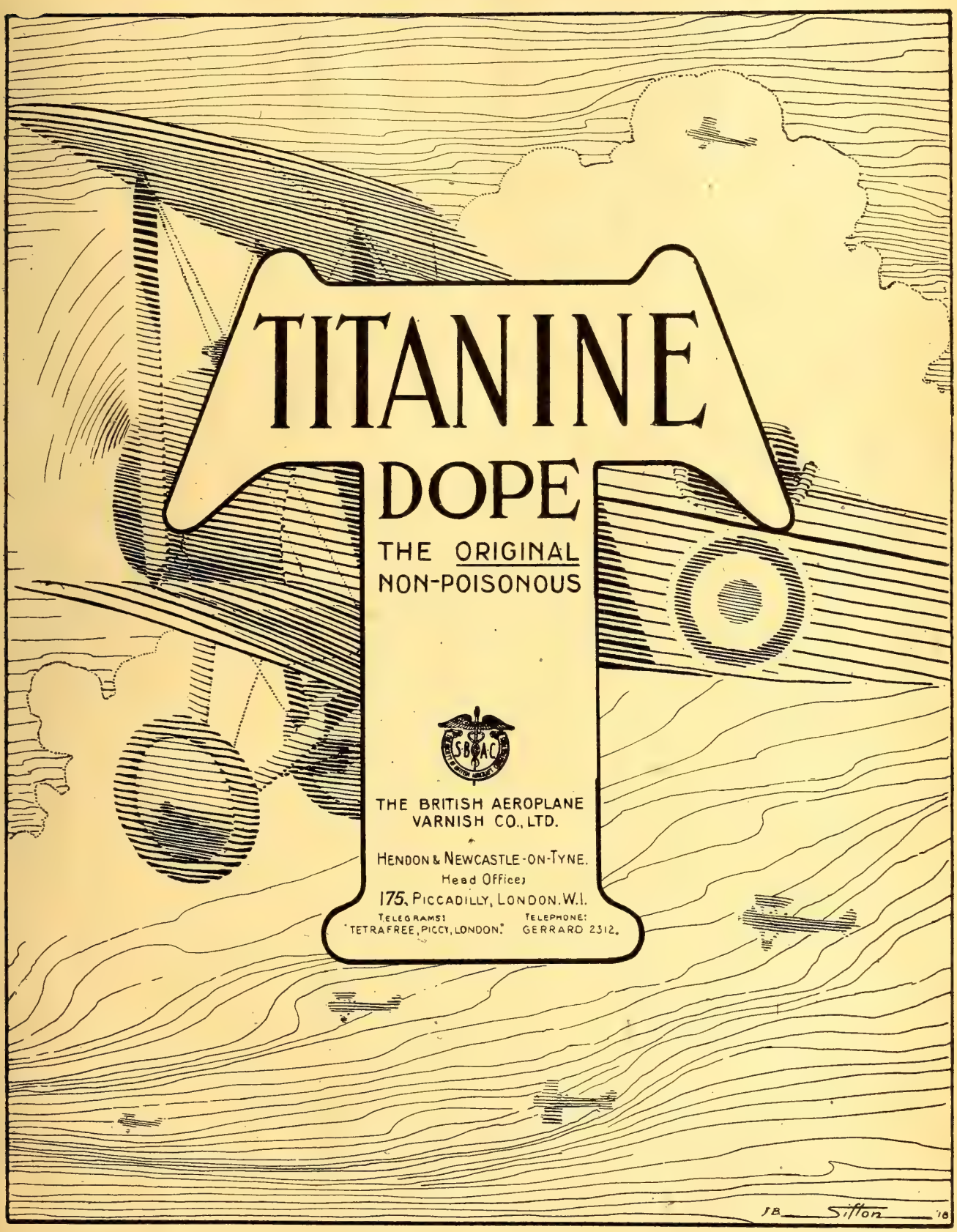


Fig. 33.


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When it is necessary to clean the distributor and its contacts, emery cloth should not be used. Clean chalk, moistened with a damp rag, will effectively clean these.

The same remarks apply to the points of the make-and-break contact—emery cloth should not be used.

If at any time it is found to be necessary to remove the permanent magnets from the magneto, a keeper should be placed across the pole tips. The keeper should take the form of a piece of soft iron, or a piece of cast iron is equally as good. A spanner will meet the case if nothing else is available, although this is not so good.

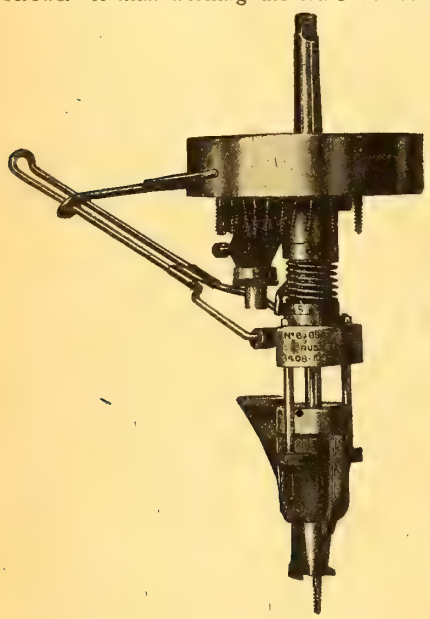
Should the magnets lose their magnetism, thus decreasing the efficiency of the magneto, they should be returned to the makers. Magnets may be re-magnetised in the workshops, but the expense of the plant to enable this to be done would be far too expensive against the cost of the maker's charges.

THE RUSSELL PATENT AUTOMATIC MAGAZINE SCREW-DRIVER.

Russell Brothers (Redditch), Ltd., have produced an appliance known as the Russell Patent Automatic Magazine Screw-driver.

This screw-driver can be used in attachment to almost any drilling or boring machine which can be adapted to take the Russell Standard Morse Taper Shanks, and which can be speeded to run at 600 revs. per min.

It is possible for a girl or youth operating one of these machines 10 hours per day for six months to drive home one million screws. A man working the same number of hours daily would require four years in which to drive the same quantity of screws by hand. A girl or youth operating one machine can get through as much work as eight men using "Yankee" braces.

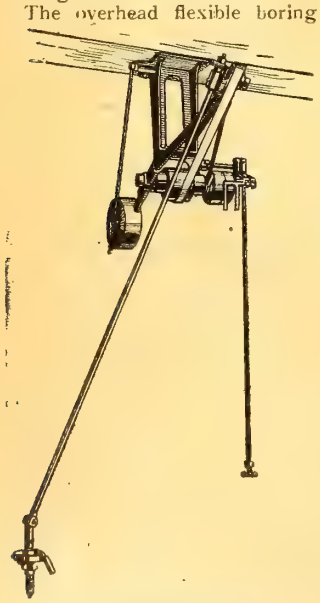


The Russell Screw-driving Machine.

The standard of work produced by these screw-drivers is very much higher than hand-work, because every screw is driven home as it is intended to be; whereas, where large quantities of screws are driven by hand, there is a tendency to help them on the way with a hammer.

Amongst several articles on which the screw-drivers are at present being used are ammunition cases, camp tables and doors, sanitary fittings, telephone reels, cordite trays, and their utility on aeroplane work, particularly for screwing three-ply sheets on to fuselage members is obvious.

The overhead flexible boring machine has been designed to meet the urgent demand for suitable means of applying Russell patent screw-drivers (sizes 2, 4, 6, and 6L) to pieces of work, such as aeroplane parts, which cannot conveniently be handled under the spindle of an ordinary fixed drilling or boring machine. It should, however, be noted that although specially suited for the purpose stated, this new flexible borer is of general utility as a wood-working machine. It has been carefully thought out, and is thoroughly well made; also it is easy to handle.



The Flexible Drive.

The frame is intended to be bolted to a beam or girder about 12 feet from the floor, or about nine feet above the surface of the work.

The tool-holder spindle is bored No. 1 Morse taper. It has about two feet effective vertical movement, and can be brought into action at almost any point on a surface measuring 10 feet 6 inches by 6 feet 6 inches.

It may also be noted that although the Russell patent screw-driver was originally intended to work only in a vertical position, there is no difficulty when it is attached to this new flexible machine, in driving screws at an angle of 20 degrees, or in some positions 30 degrees.

The fast and loose pulleys are 5 inches diameter for 1½-inch belt, and should run at 600 revolutions per minute.

The belt striking gear can be set to suit drive from either side of the machine.

The main bearings are of the ring-oiling type, and continuous oiling is also provided for in the head and the loose pulley.

A MATTER OF CONTRACTS.

A point which seems to call for the collective attention of the Society of British Aircraft Constructors arises out of a new form of contract which has recently been instituted by the Department of the Air Ministry concerned with such matters.

One gathers that, without notice being given to contractors in general, recent contract forms contain a clause under the heading "Place of Delivery," specifying that "the contractor is responsible for safe delivery at destination." Such a clause, if accepted without a very definite understanding between the parties, may lead to endless trouble and expense to the contractor.

No destination is named in the contract and therefore the said destination may be anywhere between the North and South Poles. Also the contractor has no control over railways or shipping firms, and therefore obviously cannot be responsible for safe delivery at any destination. Consequently the contractor who unwarily signs such a contract may one day find himself involved in expensive litigation with carrying companies, or an action for breach of contract by the Government.

This clause appears to be a development of an earlier official brain-wave which placed upon the contractor the responsibility for payment of carriage to destination, and arranged a method by which it was said that repayment should be made of that carriage.

Many business concerns in the Aircraft Industry know the difficulty involved in obtaining proof or certificate from railway or shipping companies that they have actually paid a certain amount for the delivery of certain goods to a certain destination, and they also know how many shillings are left out of their sovereign by the time the transaction is squared in their books after endless argument and correspondence. The Industry now is fairly well used to all this business, but now comes what is apparently the last straw, surreptitiously introduced upon the back of the camel.

One gathers that certain firms have absolutely declined the condition, and one is inclined to think that if contractors in general were to pay attention to the absurdity of such an unbusinesslike proposition, most of them would act similarly. If the majority of contractors acting through the S.B.A.C. would have the boldness to say that this condition is unacceptable to them on account of its unreasonableness, one has no doubt that the necessary alteration in the contract form would be made, for it seems fairly safe to assume that this addition to the form was made by some comparatively subordinate official and was passed by senior officials without their pausing to consider its effect.

Meanwhile, it seems probable that if contractors were to decline to use the Government form of tender and were to use their own business quotation forms instead, thus embodying their own business conditions in the contract, such contracts would be accepted by a Government department whose first duty is to get the material required by the R.A.F., irrespective of purely academic conditions.

WIRE NAILS.

Buyers who have been unable to obtain quick deliveries of wire nails will be interested in the question which was raised in the House on June 24th.

Capt. Barnett (U., St. Pancras, W.), on June 24th asked the Parliamentary Secretary to the Shipping Controller why, although shipping space for wire nails from America was allocated early in May, no nails have yet been shipped, notwithstanding the large supplies which were ready for shipment. Was the delay due to the fact that the Shipping Controller in New York was without definite instructions? **Sir Leo Chiozza Money** replied that he was obtaining the information by cable.

THE FLAX DIFFICULTY.

A Privy Council was held at Buckingham Palace on July 5th. The chief business had relation to Labour difficulties which have arisen in connection with the flax industry in Ireland. His Majesty signed a proclamation of which the effect is to compel the disputants to submit to arbitration under the Munition of War Act, 1915-16.

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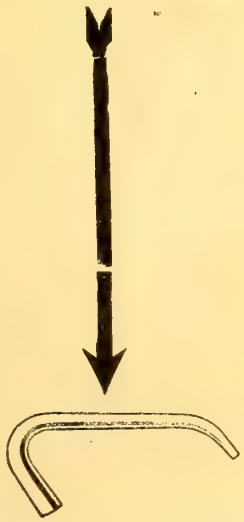
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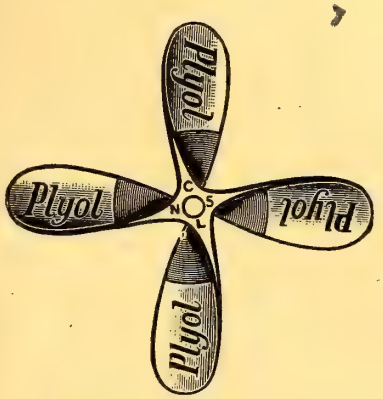
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Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone. London." 3540 Victoria (3 lines).

Aeroplane Manufacturers—

Aircraft Manufacturing Co., Ltd., Hendon. 'Airmanship, Hyde, London." Kingsbury 220.

Armstrong, Sir W., Whitworth & Co., Ltd., Newcastle - on - Tyne "Armstrong Aviation, Newcastle-on-Tyne." Gosforth 500.

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)

Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich" Norwich 851.

British & Colonial Aeroplane Co., Ltd. (The Bristol Co.), Filton, Bristol. "Aviation, Bristol." Bristol 3006.

British Caudron Co., Ltd., Broadway, Cricklewood, N.W.2. "Caudroplan, Crickle, London." Hampstead 5551.

Central Aircraft Co., High Road, Kilburn, N.W.6. "Aviduction, Phone, London." Hampstead 4403 and 4424.

Davidson Aviation Co., Ltd., Hammersmith, W.6. Hammersmith 1992 (3 lines).

Dawson, John, & Co., Ltd., Newcastle-on-Tyne. "Dependable, Newcastle-on-Tyne." Central 2604 (2 lines).

Eastbourne Aviation Co., Ltd., Eastbourne. "Aircraft, Eastbourne" Eastbourne 1176.

Grahame-White Aviation Co., Ltd., London Aerodrome, Hendon. "Volplane, Hyde, London." Kingsbury 120.

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Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).

Martinsyde Ltd., Brooklands, Byfleet, "Martinsyde, Weybridge." Woking 331; Byfleet 171.

National Aircraft Manufacturing Co, Ltd., 15, Drummond Crescent, Seymour Street, Euston. Museum 3373.

"Nieuport" & General Aircraft Co., Cricklewood, London, N.W.2. "Nieuscout, Crickle, London." Willesden 2455.

The Regent Carriage Co., Ltd., 126/132, New King's Road, Fulham, S.W.6. "Carbodis, London." Putney 2240-2241.

Roe, A. V., & Co., Ltd., Manchester. "Triplane, Manchester" City 8530-8531, Manchester.

Saunders, S. E., Ltd., East Cowes, I.O.W. "Consuta, East Cowes" Cowes 103.

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Tarrant, W. G., Byfleet, Surrey "Tarrant, Byfleet." Byfleet 1, 2 & 3.

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Airships—

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Bent Timber Parts—

Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496.
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Yorkshire Engineering Supplies, Ltd., Wortley, Leeds. "Yes, Leeds." Central 3927.

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Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic. 4830.

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Engines and Parts—

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Engines and Parts—

Beardmore Aero Eng., Ltd., 112, Great Portland Street, W.1. "Beardmore, London." Gerrard 238.

Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W.1. "Aeroflight, Vic, London." Vic. 7026.

Gordon Watney & Co., Ltd., Weybridge. "Mercédès, Weybridge" Weybridge 550 (7 lines).

Green Engine Co., Ltd., Twickenham. Richmond 1203.

Gwynnes, Ltd., Hammersmith, W. "Gwynne, Hammersmith." Hammersmith 1910.

Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London." Gerrard 8926.

Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1654-5-6.

Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton." Wolverhampton 985.

The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1. "Elevenfold, London." Walthamstow 408 (2 lines).

Electrical Accessories—

Belling & Co., Montagu Road, Upper Edmonton, N.18. "Belling, Edmonton." Tottenham 1984.

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.

Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Eusroad, London." Museum 70.

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The Rotax Motor Accessories Co., Ltd, Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Electric Cables—

E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 241.

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2207; London Wall 1564.

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Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton." Bournemouth 1160.

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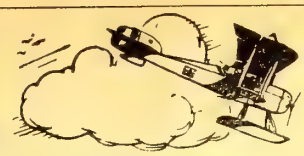
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Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Wapp, London." Avenue 3178.
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Instruments—
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Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.
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Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4959.
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Rubery Owen & Co., Darlaston, South Staffs
Sankey, Joseph, & Sons, Ltd, Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
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Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs.

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Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.
Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith "Frodobrake, Birmingham." Central 793.
MacLennan, J., & Co., 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines)

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames.
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2 "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London" London Wall 3266-3267.

Pattern Making—
Fredk. Ward, 6, 7 and 8, Allsop Street, Upper Baker Street, W. Padd. 4743.

Piston Rings—
British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.

Plating, Nickel Silver and Electro Tinning—
Arnold & Sons, Lawrence Road, Tottenham, N.15.

Power Presses and Dies—
Bliss, E. W., & Co., 2a, Pocock Street, Blackfriars Road, London, S.E.1. "Blissdon, London." Hop. 4340.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames. "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104.
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." 24214 Leeds.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil. Yeovil 129.

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, 'Wesdo, London." Mayfair 4826.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Inventors, Redditch." Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).
Gosport Aircraft Co., Gosport. "Flight, Gosport" Telephone No. 217.
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Southampton 1337.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds. Leeds 21953.

Searchlights & Landing Lights—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Arnold & Sons, Lawrence Road, Tottenham, N.15.
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London" Vic 4830.
Arnold & Sons, Lawrence Road, Tottenham, N.15.
British Metal (Kingston), Ltd., Kingston-on-Thames. [Staffs
Rubery Owen & Co., Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
Arthur Hill & Co., Silchester Road, North Kensington, W. Park 1443.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

BUYERS' GUIDE cont. on next page.



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Acceptance and Experimental Flights—
The Prodger Isaac Aviation Co. "Aeromnia, Piccy, London." Gerrard 278 (2 lines).

Acetylene Welding Plant—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1 "Flumma, Vic, London" Vic 4830

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone London." 3540 Victoria (3 lines).

Aeroplane Manufacturers—
Aircraft Manufacturing Co., Ltd., Hendon. "Airmanship, Hyde, London" Kingsbury 220.

Armstrong, Sir W., Whitworth & Co., Ltd., Newcastle-on-Tyne "Armstrong Aviation, Newcastle-on-Tyne." Gosforth 500.

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)

Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich" Norwich 851.

British & Colonial Aeroplane Co., Ltd. (The Bristol Co.), Filton, Bristol "Aviation, Bristol." Bristol 1306

British Caudron Co., Ltd., Broadway, Cricklewood, N.W.2. "Caudroplan, Crickle, London" Hampstead 6851.

Central Aircraft Co., High Road, Kilburn, N.W.6. "Aviduction, Phone, London" Hampstead 1303 and 3124.

Davidson Aviation Co., Ltd., Hammersmith, W.6 Hammersmith 1302 (3 lines).

Dawson, John, & Co., Ltd., Newcastle-on-Tyne. "Dependable, Newcastle-on-Tyne." Central 2003 (2 lines).

Eastbourne Aviation Co., Ltd., Eastbourne "Aircraft, Eastbourne" Eastbourne 1176.

Grahame-White Aviation Co., Ltd., London Aerodrome, Hendon "Volplane, Hyde, London" Kingsbury 120

Handley Page, Ltd., 110, Cricklewood Lane, N.W.2 "Hydrophid, Crickle, London" Hampstead 7120

Hooper & Co., Ltd., 54, St. James St., Piccadilly, London, S.W. "Sociable, St. James, London" Regent 912

Mann, Egerton & Co., Ltd., Norwich "Motors, Norwich." Norwich 482 (4 lines).

Martinsyde Ltd., Brooklands, Byfleet, "Martinsyde, Weybridge" Woking 331; Byfleet 171

National Aircraft Manufacturing Co., Ltd., 15, Drummond Crescent, Seymour Street, Euston Museum 3373

"Nieuport" & General Aircraft Co., Cricklewood, London, N.W.2 "Nieuscout, Crickle, London" Willesden 2455.

The Regent Carriage Co., Ltd., 126/132, New King's Road, Fulham, S.W.6. "Carbodis, London" Putney 2210-2241.

Roe, A. V., & Co., Ltd., Manchester. "Triplane, Manchester" City 8520-8521, Manchester.

Saunders, S. E., Ltd., East Cowes, I.O.W. "Consuta, East Cowes" Cowes 191.

Short Bros., Rochester, Eastchurch, and Whitehall House, S.W. "Tested, Phone, London" Regent 378

Sopwith Aviation Co., Ltd., Kingston-on-Thames "Sopwith, Kingston" Kingston 1088 (8 lines)

Standard Aircraft Manufacturing Co., 28, Bow Common Lane, E. East 2823

Tarrant, W. G., Byfleet, Surrey "Tarrant, Byfleet" Byfleet 1, 2 & 3

Thames Aviation Works, 111, Curtain Rd., E.C.2 London Wall 9766

Vickers, Ltd., Imperial Court, Basil Street, Knight-bridge, S.W.1 "Vickerfyta, Knights, London" Kensington 6810

Waring & Gillow, Ltd., Hammersmith "Warisen, Ore, London" Museum 5000

Westland Aircraft, Yeovil. "Aircraft, Yeovil" Yeovil 129

White, J. Samuel, & Co., Ltd., East Cowes "White, East Cowes" Cowes 2

Whitehead Aircraft (1917), Ltd., Richmond, Surrey "Whitecraft, Richmond, Surrey" Richmond 1036-7

Wycombe Aircraft Constructors, Ltd., High Wycombe, Bucks "Aircraft, High Wycombe" High Wycombe 8;

Airships—
Airships, Ltd., High Street, Merton Wimbledon 1311

Short Bros., Rochester, Eastchurch, and Whitehall House, S.W. "Tested, 'Phone, London" Regent 378

Aluminium Castings (Sand and Die)
Coan, R. W., 119, Goswell Road, London, E.C.1 "Krankases, Isling, London" City 3846

Bent Timber Parts—
Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London" Museum 496.
Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough" Market Harborough 43.

Bearings (Etonia Cast Phosphor Bronze)
Yorkshire Engineering Supplies, Ltd., Wortley, Leeds. "Yes, Leeds." Central 5927.

Blowpipes (Oxy-Acetylene)—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic 4830.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Vic 3540 (3 lines)

Brass Sheets for Tipping Propellers—
Pritt & Co., 46, Fenchurch Street, London, E.C.3 "Poetry, Fen, London" Avenue 935, 936, and 7996

Buildings—
Boulton & Paul, Ltd., Rose Lane, Norwich "Aviation, Norwich" Norwich 851

The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey Wimbledon 1513

Rubery, Owen, & Co., Darlaston, South Staffs

The Willley Co., Ltd., Salisbury House, London Wall, E.C.2 "Wrathless, 'Phone, London" City 2631-2.

Cable Coverings and Cable Controls—
The Bowden Brake Co., Ltd., Tyseley, Birmingham "Bowden, Acock's Green" Acock's Green 103 & 104

Herbert Terry & Sons, Ltd., Redditch "Springs, Redditch" Redditch 61.

Carburettors—
Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2 Victoria 4670.

Casein—
Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C. 3. "Suricodon, Fen, London." Avenue 34 and 35.

Celluloid (Non-Flam.)—
Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London" Central 1306-7.

Clothing—
Burberry's, Ltd., Haymarket, S.W.1. Regent 2165.

Dunhill's, Ltd., Euston Road, N.W.1. "Dunsend, London." North 3405-6.

Coloured Rags—
Joseph, A., Earl Street, London Road Southwark, S.E.1 "New Mongo Sedist, London" Hop 85, 361, 4272.

Component Parts—
Accles & Pollock, Ltd., Oldbury, Birmingham "Accles, Oldbury" Oldbury 111 (3 lines).

Central Aircraft Co., High Road, Kilburn, N.W.6 "Aviduction, Phone, London" Hampstead 4103 & 4104.

P.D.V. Aircraft Co., Ltd., Princes Street, Richmond "Aeros, Richmond" Richmond 1681.

Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros., Bilston" Bilston 10.

Cords, Tapes, and Threads—
MacLennan, J., & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115

Dopes—
British Aeroplane Varnish Co., Ltd., 166, Piccadilly, W.1 "Tetrafrec, Piccy, London" Gerrard 2312.

British Cellulose Co., 8, Waterloo Place, S.W.1 "Cellulate, London" Regent 4046

The British Emaillite Co., Ltd., 30, Regent Street, S.W.1 "Ridlespren, Piccy, London" Gerrard 280

Cellon, Ltd., 22, Cork Street, London, W.1 "Ajaxib, Reg, London" Gerrard 130

Clark Ingham, Robt., and Co., Ltd., Walter House, Bedford Street, Strand, W.C.2 "Pearline, Westrand, London" Regent 3925

Engines and Parts—
Allen, W. H., & Co., Ltd., Bedford. "Pump, Bedford" Bedford No. 1

Arrol-Johnston, Ltd., Dumfries "Mocar, Dumfries" Dumfries 284-2-2

The Beatty School of Flying, Ltd., The Broadway, Cricklewood, N.W.2 Hampstead 3003

Engines and Parts—
Beardmore Aero Eng., Ltd., 112, Great Portland Street, W.1. "Beardmore, London" Gerrard 2138

Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W.1 "Aerolight, Vic, London." Vic 7926.

Gordon Watney & Co., Ltd., Weybridge. "Mercédès, Weybridge" Weybridge 550 (7 lines).

Green Engine Co., Ltd., Twickenham. Richmond 1203

Gwynnes, Ltd., Hammersmith, W. "Gwynne, Hammersmith" Hammersmith 1410

Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London" Gerrard 8,326

Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1654-5-6

Sunbeam Motor Car Co., Ltd., Wolverhampton "Moorfield, Wolverhampton" Wolverhampton 765

The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1 "Elevenfold, London" Walthamstow 400 (2 lines)

Electrical Accessories—
Belling & Co., Montagu Road, Upper Edmonton, N.18 "Belling, Edmonton." Tottenham 1084

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1561

Mann, Egerton & Co., Ltd., 277, Cleveland Street, London, W.1 "Installing, Eusrond, London" Museum 70

Premier Electric Heaters, Ltd., 254, 254, and 260, Bradford Street, Birmingham. "Fahrenheit, Birmingham" Midland 581

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10 "Rodynalite, Phone, London" Willesden 2180

Electric Cables—
E. Kalker and Co., Coventry "Kalker, Coventry" Coventry 218

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2207; London Wall 1561

Electric Lighting and Power—
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1561

Mann, Egerton & Co., Ltd., 277, Cleveland Street, London, W. "Installing, Eusroad." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—
W. Canning & Co., 133-137, Great Hampton Street, Birmingham "Materials, Birmingham" Birmingham 3622 Central (3 lines)

Enamel—
Silica Enamel Co., New Cross, London, S.E.

Flare Lights—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London" Victoria 3540 (3 lines)

Flexible Shafts—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch" Redditch 61.

Fluxes—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London" Victoria 3540 (3 lines).

Flying Schools—
Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth "Etches, Winton" Bournemouth 1160

Cambridge School of Flying and Aerodrome Co., 308, St. Andrews Street, Cambridge. "Carbon, Cambridge" Cambridge 5 and 1056.

Furniture (Office)—
Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2 London Wall 573 and 6179

Galvanising—
Boulton & Paul, Ltd., Rose Lane, Norwich "Aviation, Norwich" Norwich 851.

Gauges—
J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17.

Gears—
Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham "Mosgear, Birmingham" East 197

Glue—
Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Bececolin, Cannon, London." City 1206.

Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid) "Excroiden, Wapp, London." Avenue 3178.

Mendine Co., 8, Arthur Street, E.C. Bank 5873.

Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3

Goggles—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1 "Shatterlys, Piccy, London" Regent 1340.

Hack Saw Blades and Machines—
Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880

Heating and Ventilating—
Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1 "Kinnell, London" Hop 572 (2 lines)

Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevaut, London." Central 7121 (6 lines).

Hollow Spars—
McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718.

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1108.

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 632.

Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17 "Ancroid, Phone, London." Walthamstow 180.

Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London "Pegamoid, Cent, London." City 9703 (2 lines).

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1 "Vicksmag, Phone, London" Museum 430.

The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry" Coventry 278

The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry." Coventry 1008-1009.

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham "Clifford, Birmingham" Central 42-43 Avenue 1432

Metals in General—
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.

Pritt & Co., 46, Fenchurch Street, London, E.C.3 "Poetry, Fen, London." Avenue 935, 936, and 7996.

Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London." City 6342.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury" Oldbury 111 (3 lines)

Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn" Holborn 4959

Aircraft Supplies Co., Ltd., Ascot House, 135, Long Acre, W.C.2. "Upcast, Rand, London" Gerrard 274 (2 lines)

Arnott & Harrison, Ltd., Hythe Road, Willesden Junction Willesden 2207

Bayliss, Jones & Bayliss, Ltd., Wolverhampton (Bolts and Nuts) "Bayliss, Wolverhampton" Wolverhampton 1011.

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds "Propellors, Leeds." Roundhay 345 (3 lines).

British Metal (Kingston), Ltd., Kingston-on-Thames

Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3 Avenue 1132

Lombard Rim and Tube Co., Lombard Street, Birmingham "Lombardic, Birmingham." Midland 211 (2 lines).

Metal Parts and Fittings—
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Eusroad, London" Museum 70

Mountford, Fredk., Ltd., Lifford, Birmingham. "Fremo, Birmingham" King's Norton 261

Rubery, Owen & Co., Darlaston, South Staffs

Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.

The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.

The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selsero, Phone, London." Regent 1181.

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10 "Rodynalite, Phone, London." Willesden 2480.

Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston" Bilston 10

Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol "Ingenuity, Saltford." Keynsham 21.

Metal Spinnings—
Arnold & Sons, Lawrence Road, Tottenham, N.15.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415

Rubery, Owen & Co., Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast" Belfast 4033-4034-4035.

Bowden Wire, Ltd., Willesden Junction, "Bowirelun, Harles, London" Willesden 2400 (3 lines)

British Metal (Kingston), Ltd., Kingston-on-Thames.

Brown Bros., Ltd., Great Eastern Street, E.C.1 "Imbrowned, Bethroad, London" London Wall 6700.

Herbert Frood Co., Ltd., Chapel-en-le-Frith "Frodobrake, Birmingham." Central 795.

MacLennan, J., & Co., 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115

Motor Cars—
Arrol Johnston, Ltd., Dumfries "Mocar, Dumfries." Dumfries 281-282.

Mann, Egerton & Co., Ltd., 374/382, Euston Road, London, N.W.1 "Manegecar, Eusroad, London." Museum 70.

Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines)

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames

The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2 "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemalvo, Ave, London" London Wall 3206-3207.

Pattern Making—
Fredk. Ward, 6, 7 and 8, Allsop Street, Upper Baker Street, W. Padd. 4743.

Piston Rings—
British Chuck & Piston Ring Co., Coventry "Rings, Coventry" Coventry 723.

The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield "Ocean, Sheffield." Sheffield 2149.

Plating, Nickel Silver and Electro Tinning—
Arnold & Sons, Lawrence Road, Tottenham, N.15

Power Presses and Dies—
Bliss, E. W., & Co., 22, Pocock Street, Blackfriars Road, London, S.E.1. "Blissdon, London" Hop. 4340.

Presswork—
Rubery, Owen & Co., Darlaston, South Staffs.

Terry, Herbert & Sons, Ltd., Redditch "Springs, Redditch" Redditch 61

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)

Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.

Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames. "Ebora, Kingston" Kingston 672

Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104.

Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge" Weybridge 520-521

Mann, Egerton & Co., Ltd., Norwich "Motors, Norwich" Norwich 482 (4 lines).

Oddy, W. D., & Co., Leeds. "Airscrews, Leeds" 22213 Leeds.

Stanley Aviation Co., 67, Kingsland Road, E.2 City 8547.

Westland Aircraft, Yeovil. "Aircraft, Yeovil Yeovil 129

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts Foster Instruments, Letchworth Letchworth 20

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England "Cradock, Wakefield." Wakefield 166

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch "Investors, Redditch" Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines)

Gosport Aircraft Co., Gosport. "Flight, Gosport" Telephone No 217

Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines)

Short Bros., Rochester "Seaplanes, Rochester." Chatham 627.

Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Southampton 1337.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds Leeds 21065

Searchlights & Landing Lights—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10 "Rodynalite, Phone, London" Willesden 2480.

Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex "Golshel, Hounslow." Hounslow 254

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham "Accles, Oldbury." Oldbury 111 (3 lines).

Arnold & Sons, Lawrence Road, Tottenham, N.15.

Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds "Propellors, Leeds." Roundhay 345.

W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550

British Metal (Kingston), Ltd., Kingston-on-Thames

London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 197 Birmingham

Rubery, Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London" Vic 4830

Arnold & Sons, Lawrence Road, Tottenham, N.15

British Metal (Kingston), Ltd., Kingston-on-Thames [Staffs

Rubery, Owen & Co., Darlaston, South

The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selsero, Phone, London" Regent 1181

Arthur Hill & Co., Silchester Road, North Kensington, W. Park 1115.

Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London" Victoria 3540 (3 lines).

BUYERS' GUIDE cont. on next page.

"The Aeroplane" Buyers' Guide.—*continued.*

Small Tools—
The Small Tool Supply Co., Ltd., Avenue Chambers, Southampton Row, W.C. "Prosait, West-Cent., London." Museum 2655.

Sparking Plugs—
Lodge Sparking Plug Co, Ltd., Rugby. "Igniter, Rugby." Rugby 235.
Ripault, Leo. & Co., Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

Springs—
Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Stampings—
Arnold & Sons, Lawrence Road, Tottenham, N.15.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3. Avenue 1432.

Steel—
Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 to 3237.
Guthrie, J. B., & Son, 30, St Mary Axe, E.C.3. Avenue 1432.
Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Steel Stamps and Markings—
John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).

Tanks & Cowls for Aeroplanes
Zephyr Ventilating Co., Ltd., Tyopiatt Road, Bristol. Telegrams.—Zephyr, Bristol

Taper Pins—
Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—
MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Timber—
Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526.
Hopton & Sons, George Street, Euston Square, London. N.W.1. "Hoptons, Eusquare, London." Museum 496. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.
J. Owen & Sons, Ltd., 109a, Borough High Street, S.E.1. "Bucheron, London." Hop 3811 (2 lines).

Time Recorders—
Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles— Staffs.
Rubery Owen & Co., Darlaston, South
Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W "Installing, Euston road." Museum 70 (4 lines).

Tyres and Wheels—
The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent." Gerrard 1214 (5 lines).

Undercarriages—
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros. Bilston." Bilston 10.

Varnishes—
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.
Clark Ingham, Robt., & Co., Ltd., Walter House, Bedford Street, Strand, W.C.2. "Pearline, Westrand, London." Regent 3923.
Harland, W., & Son, Merton, London, S.W.19. "Harland, Wimbledon 45." Wimbledon 45 and 1395
Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—
Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95.

Washers— Avenue. 1432.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Watchmakers and Jewellers—
(Silver Models)—
Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines).

Welding and Cutting Plant—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma Vic, London." Vic 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Welding Repairs—
Arnold & Sons, Lawrence Road, Tottenham.
Barimar, Ltd., 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.
The New Welding Co., 26, Rosebery Avenue, London, E.C.1. "Windoneeda, Holb, London." Holborn 5252.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Wind Shields—
Auster, Ltd., 133, Long Acre, W.C. "Winflector, London." Regent 5910.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesdon Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Wire Gauze—
Greening, N., & Sons, Ltd., 16, Finsbury Street, London, E.C.2. "Setscrew, Finsquare, London." London Wall 1082.
Guthrie, J. B., & Son, 30, St Mary Axe, E.C.3. Avenue 1432.

Wires and Cables—
Bruntons, Musselburgh, Scotland. "Wiremill, Musselburgh." Musselburgh 28.
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466 (3 lines).

Wirework—
Terry, Herbert, & Sons Ltd., Redditch. "Springs, Redditch." Redditch 61.

Woodworking Machinery—
Robinson, Thomas, & Son, Ltd., Rochdale. "Robinson, Rochdale." Rochdale 467.
Sagar, J., & Co., Ltd., Halifax. "Sawtooth, Halifax." Halifax 136.
Wadkin & Co., Leicester. "Woodworker, Leicester." Leicester 3614.

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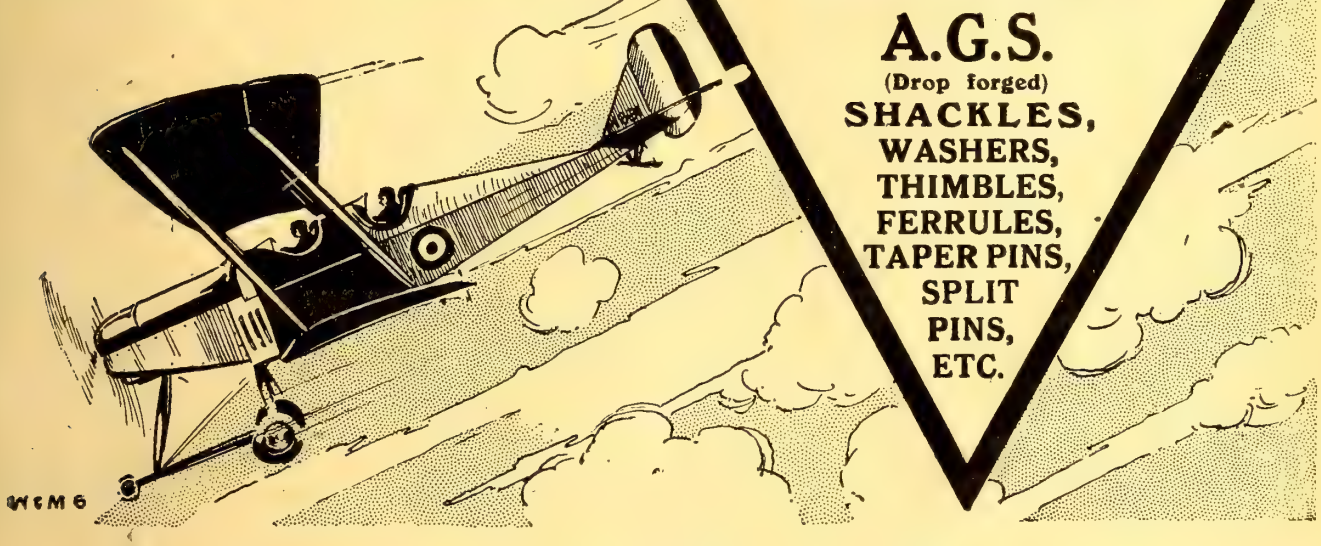
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Telegrams—
"Whitomoss,
Rand, London."

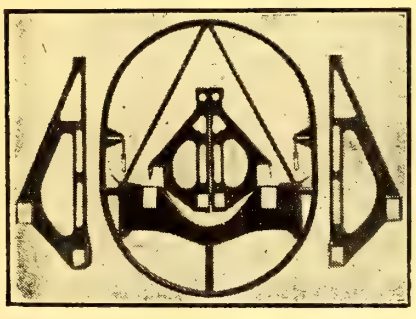
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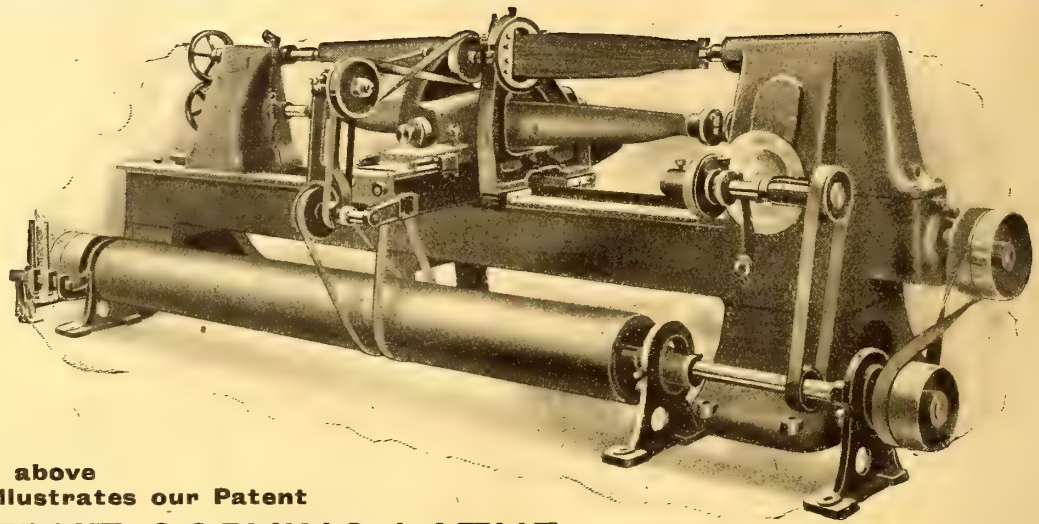
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"	5/16 BSF	116C
"	11/32 BSF	116D
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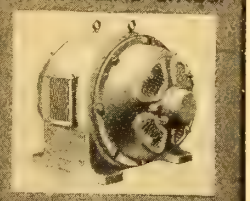
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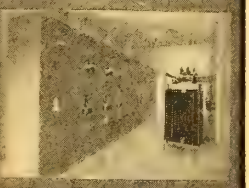
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THE PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by The Aeroplane from the current Official Patents Records.

Patent Applications.

Aeronautical Instrument Co. Aircraft. No. 11063. July 5th.
Ashdown, H. Clinometer for aircraft. No. 10892. July 3rd.
Barr, A. J. A. W. Dopes. No. 10862. July 2nd.
Brown, F. W. Applying dope, etc., to surfaces. No. 10879. July 2nd.
Cabot, G. L. Launching-mechanism, for aircraft. No. 11097. July 5th.
Dick, H. C. K. Lighting-apparatus to enable a gunner to maintain his hold on a target indefinitely. No. 11123. July 4th.
Dowding, H. C. T. Hand-operated aero-engine-starter mounted on trolley. No. 10969. July 4th.
Fairweather, H. G. C. Parachutes. No. 10872. July 2nd.
Furley, E. Aerial circle signal system. No. 10775. July 2nd.
Glazebrook, Sir R. T. Construction of aeroplane wings, etc. No. 11092. July 5th.
Hegerty, A. J. Device for retarding rapid drop of aeroplanes in engine trouble. No. 11058. July 5th
Levasseur, P. Aerial propellers. No. 11090 July 5th.
Long, H. Device for indicating inclination of aircraft. No. 11039. July 5th.
Mateyka, F. J. Parachute for aircraft. No. 11098. July 5th.
Mears, F. C. Parachute for use with aeroplanes. No. 11050. July 5th.
Morse, J. J. Buckle fastenings for hangar-covers. No. 11051. July 5th.
Nicholls, G. G. Parachutes. No. 10992. July 4th.
Parnall & Sons. Mounting rotary or radial engines on aircraft. No. 10904. July 3rd.
Parnall & Sons. Cowling rotary engine of aircraft. No. 10905. July 3rd.
Parnall & Sons. Emergency alighting apparatus for aeroplanes. No. 10906. July 3rd.
Parnall & Sons. Disposition and mounting of ailerons of aircraft. No. 10907. July 3rd.
Parnall & Sons. Ailerons. No. 10908. July 3rd.
Ramaugé, A. Parachute comprising pneumatic means. No. 10875. July 2nd.
Sadgrove, W. B. Method of manufacture of aeroplanes, etc. No. 10866. July 2nd.
Scatchard, F. Determining velocity of aeroplanes, etc. No. 11031. July 5th.
Soc. Anon. L. Breguet. Shock-absorbing device for aeroplanes, etc. No. 10873. July 2nd.
Soc. Nautop Freres et de Marsac. Transparent dope, and manufacture of same. No. 11007. July 4th.
Tarrant, W. G. Framework of aeroplanes. No. 11094. July 5th.
Thomas, G. H. Airships. No. 10926. July 3rd.
Thomas, G. H. Airships. No. 10927. July 3rd.
Tolkowsky, S. Aircraft. No. 10836. July 2nd
Walker, J. R. Clinometers for aircraft, watercraft, etc. No. 10971 July 4th.
Wright, M. E. A. Controlling devices of aeroplanes. No. 10860. July 2nd.

Complete Specifications Accepted, prints of which can be obtained on and after July 25th, 1918.

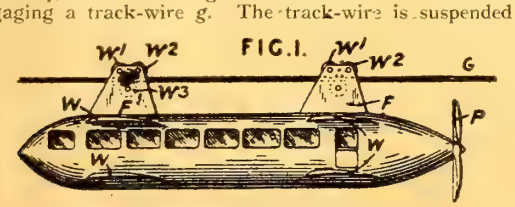
116,907. April 5th, 1917. Howell, W. S. Stabilising-devices for aeroplanes and the like.
116,914. June 19th, 1917. Roots, J. D. Flying-machine.
116,942. July 4th, 1917. Kelly, W. H. Flying-machines.
116,951. July 12th, 1917. King, H. G. Flying-boats.
116,984. Sept. 17th, 1917. Blackburn Aeroplane and Motor Co., and Copley, J. W. Attachment devices for tension members, wires, or stays, particularly applicable to aircraft.
116,990. Sept. 26th, 1917. Sage & Co., F., and Feary, N. A. T. N. Instruments for indicating inclination.
117,008. Oct. 27th, 1917. Blackburn Aeroplane & Motor Co., and Soultanian, V. Gripping or clamping devices or jigs.
117,036. Jan. 4th, 1918. Milmore, B. E. Aeroplanes.

Abridgments of recently published Specifications.

115,480. Aeronautics. Wells, R. F., 30, Whitehead's Grove, Chelsea, London.

Ways and Guides, Aerial.—An aerial railway comprises a suspended track-wire on which runs a torpedo-shaped car provided with an aerial propeller and with lifting-planes and steadying-fins. Fig. 1 shows a car fitted with planes w, a propeller p, and fins f, the fins having each three or more rollers w^1, w^2, w^3 engaging a track-wire g. The track-wire is suspended from

FIG.1.

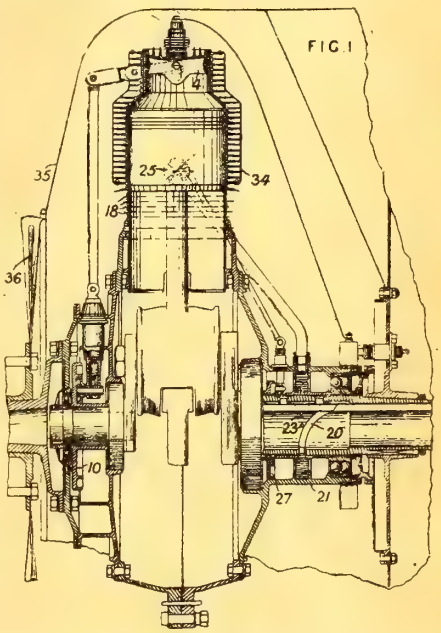


cross spans or beams carried on vertical posts placed to one or both sides of the track and may be tight or allowed to hang in loops. Where rivers are crossed, the wire may be supported by an additional catenary wire. Power may be supplied through a separate electric conductor parallel to the track. Floating supports may be used when lakes are traversed. Specification 17859/93 is referred to.

115,673. Internal-combustion engines. Cochrane, W., 62, Dennington Park Road, West Hampstead, London.

Two-Stroke-Cycle Engines; Cylinders, Construction of and Cooling; Valves; Valve-gear; Carburetting-Apparatus.—A two-stroke-cycle engine with radial cylinders revolving in a casing 35 has a number of rows of small ports 18 which are uncovered by the piston at about half outstroke, allowing the exhaust gases to escape and then air to enter the cylinder when a ring valve 4 uncovers exhaust ports in the cylinder head. Rich carburetted air is admitted through an oscillating disk valve 25. The valves are worked by grooved cams 10, 27 respectively, a ribbed aluminium jacket is shrunk on to the cylinder barrel and has a semi-cylindrical air deflector 34 about its rear side. Air is forced through the casing 35 by a fan 36. Rich carburetted air is formed in a carburettor 21 comprising an annular chamber in the hub of the crank chamber, filled with gauze and supplied with air through holes 23 in the hollow crank-shaft and oil through the pipe 20.

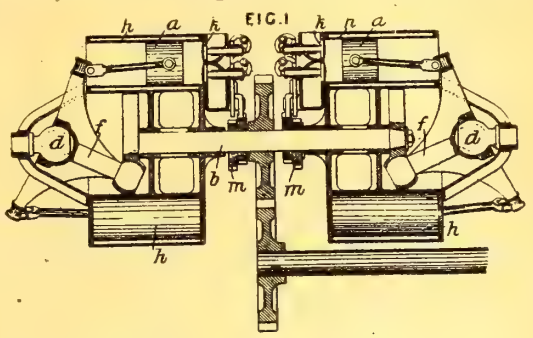
FIG.1



115,656. Internal-combustion engines. Redrup, C. B., Selkirk, Freta Road, Bexley Heath, Kent.

Driving-Gear.—An internal-combustion engine comprises two groups of cylinders h arranged in circles around a central shaft

FIG.1



b, the pistons a being connected to two oscillating disks f which balance each other. Each disk is pivoted universally at its centre d and is ball-jointed to a crank on the shaft b. The valves k are operated by cams m on the shaft b.

A POLICE COURT CHARGE.

At the West London Police Court on July 11th, before Mr Boyd, Henry Healey and William Everson were summoned for conspiring to defraud Waring and Gillow, Ltd., aeroplane manufacturers, of divers sums of money on various dates.

Sir Richard Muir, prosecuting, said that the defendants, who were fitters' erectors at the factory, had induced George Collard, a fitter's mate, to "clock" them in and out on occasions, when they either did not attend at the factory at all, or were present only for a few hours. On May 17 Everson received payment of £4 9s. 7d., part of which was undoubtedly obtained by this method.

Detective-Sergeant Robinson said that Everson remarked, when the summons was served, "This is done through spite because the strike is on."

The Magistrate dismissed the summons against Healey on the ground of lack of corroboration, and committed Everson for trial on his own recognisances.

THE AIRCRAFT TRADER

MARKET TOPICS.

Prices are for quantities on usual terms.

COPPER.—Home Position.—There is nothing very startling to report. The official prices remain unchanged, and supplies are very satisfactory.

America.—Everyone is astounded to learn that the U.S.A. authorities have decided to advance the price 2.50 cents to 26 cents, this price to remain in force until August 16th.

It was expected that, in view of the dissatisfaction which was expressed by producers at the price remaining unaltered when reconsidered in May, serious consideration would be given to the matter when it was due to come before the authorities on August 15th, but very few expected any alteration before that date. Some strong influence has brought the authorities to a quick decision, seeing that the Federal Trade Commission had only recently decided against an advance being given. The smelter output is very satisfactory, and the refineries are making excellent progress.

TIN.—This market is still very difficult and the future outlook obscure. Buyers here are anxious to secure supplies for immediate requirements, but there are no sellers. This is probably due to the stiffening of prices in the East. There is a general feeling that if there was a further reduction in Eastern prices sellers here would release some of the stocks they are holding.

The market is also very quiet in U.S.A., and the demand for Eastern Tin has quietened considerably.

Comparative Prices

To-day	£330	0	0	per ton.
June 4th	337	0	0	per ton.
June 26th	332	0	0	per ton.
May 9th	380	0	0	per ton.

LEAD.—The situation here is very satisfactory as far as supplies for Government work are concerned; the position of this market in U.S.A. is, however, rather uncomfortable, supplies being very scarce.

STEEL.—The Steel position is very comfortable indeed. Supplies are in excess of the demand, and, in fact, the Steel situation generally is easier and more satisfactory than it has been for three years.

The action of the military authorities with regard to recruiting from the Steel industry is being very severely criticised, and the Sheffield producers have sent a deputation to Sir Auckland Geddes with the object of persuading him to modify the scheme as far as that district is concerned. The majority of these young men entered the mills when they were 14, 15 and 16, and having been trained, are now highly skilled workers. Their work in quite a number of cases is such that when they are taken away a gang of men immediately become idle. The question certainly calls for serious consideration, and so far as the Aircraft Industry is concerned constructors do not want a repetition of the Timber muddle.

Official prices remain unchanged.

TIMBER.—The Timber situation is still uncertain. Recent reports indicate that Spruce substitutes are not proving satisfactory. There are ample supplies of substitutes available. Very little Silver Spruce has arrived recently, and supplies of other substitutes are not available. A little Walnut has been received recently, but very little Mahogany.

Plywood supplies continue quite satisfactory. No official notification of control appears to have been issued yet.

Official prices remain unchanged.

FABRIC.—Supplies are fairly well maintained at present, and official prices remain the same.

It is difficult to obtain tapes and webbing, and consumers would be well advised to look a long way ahead.

THE MONTHLY MARKET PRICE LIST.

The prices given below are the prices ruling on the above date.
Terms.—Usual for the various materials mentioned.
Prices of old metals are as quoted by scrap dealers.

Prices must not be taken as specific quotations for definite quantities delivered to any part of the country.

Aluminium.

Ingot	£225 per ton.*
Remelted	£210 per ton.*

Brass.

Sheets	15¼d. per lb.
Strip	14¼d. per lb.
Wire	14⅝d. per lb.
Tubes	16¼d. per lb.
Castings	16d. to 18d. per lb.
Turning Rod	13½d. per lb.
Brazed Tubes	18½d. per lb.

Copper.

Ingot, Standard, Cash	£110 per ton.*
Ingot, Standard, 3 mos.	£110 per ton.*
Best Selected (net)	£123 to £119 per ton.
Sheets	£149 per ton.
Wire	15½d. per lb.
Tubes, S.D.	19d. per lb.
Tubes, Brazed	19d. per lb.
Rivets	1s. 10½d. per lb., basis.
Tacks	1s. 10d. per lb.

Fabric.*

Linen, R.A.F., 17C, Spec., 36 in. wide, 3s. 1d. p. yd.
Linen, R.A.F., 17C, Spec., 38 in. wide, 3s. 3d. p. yd.
Linen, R.A.F. 17C, Spec., 42 in. wide, 3s. 7d. p. yd.
Spaced, R.A.F., 17C, Spec., 37½ in. wide, 2s. 1d. p. yd.

Gun Metal.

Castings, Plain ..... 1s. 8d. to 1s. 10d. per lb.

Lead.*

Virgin Pig	£29 per ton, c.i.f. net.
Virgin Pig	£30 per ton, ex stores net.
Sheets	£41 per ton, D/d. net.
Pipes	£41 10s. per ton net.
Dry White	£51 per ton, less 5 per cent.
White in Oil	£58 per ton. (lots over 5 cwt. less 5 per cent.)
Red in Oil	£42 per ton, less 2½ per cent. (lots under 5 cwt. less 5 per cent.)
Red in Oil	£42 per ton, less 2½ per cent.

Nickel.

Nickel ..... £225 per ton.

Phosphor Bronze.

Ingots, 5cwt. and under ... £161 to £186 per ton. (Subject to Copper and Tin Fluctuations.)
Castings ..... 1s. 8½d. to 2s. 1d. per lb.

Phosphor Copper.

Ton lots ..... £200 to £205 per ton.

Silver.

Silver ..... 48 13-16d. per oz.

Solder.

Plumber's	£141
Tinman's	£183

Steel.

High Speed, 14 p. cent., Tungsten, 3s. 8d. p. lb., basis.*†
High Speed, 18 p. cent., Tungsten, 4s. 5d. p. lb., basis.

Alloy Steels to Air Ministry Specifications.

Round and Square :—

Specification No. S2	£86
Specification No. S2 (bright-drawn)	£115
Specification No. S8	£86
Specification No. S10	£70
Specification No. S12	£75
Specification No. S14	£43
Specification No. S15	£70
Specification No. S16	£70
Specification No. S17	£75
Specification No. S18 (oil-hardened)	£86
Specification No. K1	£75
Specification No. K2	£75
Specification No. K3	£86

The above prices are for ¼ in. to 5/16 in. only, other sizes are proportionate.



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HEXAGONS.

	.455 and .525	.601 and .710.
Specification S2	£79	£77
Specification S8	£79	£77
Specification S2 (bright-drawn),	£112	£112
Specification S8 (bright-drawn),	£112	£112

SPELTER.

English f.o.b., Birmingham ..... £54-£50

TIN.

Tin £330

TINPLATES.

Tinplate ..... 33s. 6d., basis, f.o.t.*

TIMBER.†

	Official.
Silver Spruce	10s. 4d. c.f.
*English Ash (selected logs)	7s. 6d. c.f., f.o.r.
English Ash (selected lengths and thicknesses of plank)	10s. 6d. c.f., f.o.r.
Mahogany	1s. 10d. to 2s. 0d.
Walnut	2s. 0d. to 2s. 3d.

*For further details see Home-Grown Timber Prices Order, 1917.

ZINC.

Zinc Sheets (American).....£100, f.o.b., New York.

ALUMINIUM.

Description.	Price per ton on sale to refiner, delivered at refinery.
Sheet cuttings and rods containing a minimum of 96 per cent. Al.	£160 0 0
Old rolled, etc., containing a minimum of 96 per cent. Al.	120 0 0
Spinnings, punchings, and thin small scrap; also painted and varnished scrap that needs melting, containing a minimum of 96 per cent. Al.	105 0 0
Lump scrap from aero castings and material of equivalent value, containing 87 to 95 per cent. Al.	100 0 0
Turnings and Swarf, generally containing 87 to 95 per cent. Al.	87 10 0
Scrap, generally containing 80 to 86 per cent. Al.	80 0 0
Swarf and inferior Swarf, generally containing below 80—86 per cent. Al.	70 0 0
All Scrap, containing below 80 per cent. Al., not to exceed	65 0 0
All Swarf, containing below 80 per cent. Al., not to exceed	60 0 0

SCRAP MATERIALS (LONDON PRICES).

Brass, Heavy Selected	£90
Copper, Clean	102
Copper, Brazery	80
Gun-metal, Scrap	125
Lead, no Draft	28
Zinc, Old	43

*Official Prices.
†Includes Selection and Delivery.

STEEL TUBING.

A revised scale of prices of weldless steel tubing has been issued; this applies to all orders received on and after July 1st. Firms are advised to apply to the Air Ministry for a revised list.

STANDARDISATION AND SPECIALISATION.

The British Chuck and Piston Ring Co., Ltd., of Coventry, have produced an interesting little booklet on standardisation in general, and on specialisation in particular, where it affects piston rings and shackle bolts.

Responsible persons in the Aircraft Industry are invited to apply to the firm for a copy.

THE HALFPENNY TRADERS' POST.

Many firms are using 1d. stamps on postal matter which could be sent for ½d. under the provisions of the "Printed Paper Rate."

All commercial papers and business papers of a formal character, if under 1 oz., can be posted under the "Printed Paper" head at the ½d. rate. Furthermore, postcards bearing a ½d. stamp may still be used for ordinary trade purposes, including receipts for money if the words "Post Card" are deleted, and the words "Printed Paper Rate" inserted in the top left-hand corner.

THE ITALIAN AIRCRAFT INDUSTRY.

At an extraordinary General Assembly of the Directors and Shareholders of Gio. Ansaldo and Co., held at Rome, on June 26th, it was decided to increase the firm's capital to 5,000,000 lire. Some 70 of the shareholders were present, representing over 300,000 shares. In the course of a long speech, the Directors explained the history of the business since its inception in 1846 to the present time, as also the why and wherefore of the new emission.

Referring to the aeroplane branch of the company's trade, it was announced that four factories for building these machines had been constructed, and one, that of the firm of Pomilio, acquired. Presumably the Sit business is merely amalgamated with Ansaldo therefore.

Also the shareholders were told of the series of subsidiary businesses for which works have been laid down, such as the motor works, the weldless tube factory, the bronze and aluminium foundries, and the establishments whence essential accessories, such as radiators, turnbuckles, steel cables, and wire, emanate. To meet the want of coal, whole mines of lignite and other surrogate combustibles have been exploited, waterfalls harnessed, and, in one district alone, 200,000 h.p. for the electric working of metal mined there have been provided.

The new issue is for 4,000,000 lire in shares of 250 lire each.

T. S. HARVEY.

AN OLD FRIEND IN A NEW ROLE.

His many friends in the Aircraft Industry will be interested to hear that Signor Gino Virgilio, who has so long been known to the Aircraft Industry in this country as a first-class instructor, and a very able aeroplane constructor, has started the Virgilio Aircraft Co. His postal address is Olympia, Chichester, Sussex.

It will be remembered that for some time past he was running the Well's Aviation School in the vicinity of Chichester. Signor Virgilio's experience dates back further than one might think, in that he had his first experience of aircraft construction with Signor Caproni in Milan in 1908. As progress in Italy was very slow in the early years he left that country and went to Switzerland and then to Germany, where he had experience with various German engineering firms.

He came to England in 1912 and was first associated with the Bréguet Co., and afterwards with Mr. Geo. W. Beatty, whence he left to join the Wells Company.

Incidentally, it is worthy of note that Signor Virgilio has taught 150 pupils to fly in this country, and that the great majority of them are now in the Royal Air Force. Naturally everybody will wish Signor Virgilio every success in his new venture.

FLAX AND FINANCE.

On July 10th, the Flax Companies (Financial Assistance) Bill, in the House of Commons, was considered in Committee.

Mr. Sherwell moved as an amendment restricting to persons "carrying on a bank or other institution which has for its principal object the lending of money" the authority given by the Bill to render financial aid.

Mr. Forster, Financial Secretary to the War Office, said he was unable to accept the amendment. Its adoption would prevent those engaged in the linen industry taking part in operations in which they were anxious to engage. Owing to the present shortage in supplies of material, the linen industry had to look forward to a prospect in the next 12 months of standing machinery and severe unemployment, and these conditions those concerned were anxious to avoid in the interests of the workpeople, the shareholders, and the country. In order to keep the machinery of the linen industry running it would be necessary to treble the production of flax in the United Kingdom. To accomplish that would take a considerable time, but there was no time to lose in setting about the business.

Sir C. Hobhouse was afraid there was a danger that the grower of flax might be tied to the person who made use of his produce.

Mr. Forster said the amendments he proposed to move were simple. One would make it clear that the consent of the Board of Trade was necessary before any company or others could exercise powers under the Bill; another made it plain that Treasury sanction was necessary before new capital could be raised; the third amendment adopted **Mr. Holt's** proposal that the power to borrow money should not operate so as to increase the total amount which the company or association was authorised to borrow.

Mr. Sherwell withdrew his amendment, and Clause I was agreed to with **Mr. Forster's** amendments.

The Bill passed through Committee and was read the third time.

A WHITE SALE.

The annual sale of Robinson and Cleaver, Ltd., at the Linen Hall, Regent Street, W., is now in full swing, and readers, men and women, are reminded that remarkable bargains are to be had at this time of the year.

A catalogue will be sent by Robinson and Cleaver upon application, and the sale will be open until July 27th.

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COMMERCIAL AERONAUTICS

AIRCRAFT versus RAILWAYS.

In a recent article one dealt in general terms with the possibility of utilising the aeroplane as a light commercial vehicle or public service vehicle when the war is over. This is a matter which has got to be considered very seriously, and the only way of arriving at anything approaching safe conclusions as to the legitimate sphere of each method must be by comparing the proposed method of transport with the various established methods, endeavouring in each case to pick out and assess the importance of its comparative advantages and disadvantages. Let us first compare the aerial service with the railway.

1.—Cost of Operation.

To make comparisons of cost of operation we must take some recognised unit, such as the passenger mile or the ton mile. It is useless to compare the cost of operation of two totally different methods of transport unless we take proper account of the total load-carrying capacity in either case. For the moment we will not attempt to get down to figures, because it will be some time before figures for aeroplanes can be obtained accurately.

Even the most staunch adherents of flying would not, however, be found to argue against the conclusion that the cost of conveyance per ton mile or per passenger mile is infinitely lower with the railway than with the aeroplane, provided that enough traffic is obtainable to keep both methods fully employed. So long as we consider operating costs only and do not include the costs of maintenance of plant other than the moving vehicle itself, the railway invariably has the advantage.

2.—Standing Charges.

The comparison of standing charges will lead to a much more variable conclusion. If we had to deal with hundreds of thousands of tons a day, then the standing charges for the railway would be lower per unit carried than those for the aeroplane.

If, on the other hand, we have to deal only with quite small aggregate loads, the standing charges for the aeroplane service will be very much less than those of the railway. This is due to the fact that the railway locomotive requires to travel upon a permanent way which must be first laid at great cost, and subsequently maintained at considerable cost.

The cost of maintenance is not proportionate to the use that is made of the railway. The less the use, the higher the cost of maintenance of the permanent way per mile run, because a certain amount of supervision is in any case necessary, and weather and other factors are responsible for depreciation.

If we were to lay a railway from Sierra Leone to Cairo, the traffic which would be carried upon that line would be so trifling that the standing charges per mile run would be vastly greater than the standing charges and operating costs together for an aeroplane service working between the same terminals.

3.—Combining Standing and Running Costs.

Up to this point we have, therefore, arrived at the conclusion that, wherever traffic is heavy, the railway is greatly superior in economy to the aeroplane for the carriage of general merchandise and any but exceptional passenger and mail traffic. Where the traffic is extremely light and the distances are great, the aeroplane has the advantage over the railway.

Between the two extremes there must be some point at which, so far as costs are concerned, the two methods have equal merit. The position of this point will fluctuate as time goes on, and its movement will probably be in favour of the aeroplane, which has as yet only reached a stage of development beyond which considerable and rapid improvement may be safely anticipated.

4.—Mobility.

In the matter of mobility, which takes various forms, in principle the aeroplane is vastly superior to the railway. Not only can it carry more exactly from any point to any other point, but it can also carry over either land or water.

The railway is the least mobile of all forms of traffic, if we include the tram as a species of railway. The aeroplane is not on all accounts the most mobile method of all, but it is the only one which permits of a journey being made conveniently partly over land and partly over water without any changes of conveyance and consequent delays.

The aeroplane is not ideal as regards mobility, because of its size, and because it must terminate its journey on a prepared landing ground, which means that it cannot start and finish exactly at any desired point. In undeveloped countries the only methods which have the advantage over it in this respect for the conveyance of goods or passengers involve the use either of man-power or of draught animals.

In developed countries the railway may conceivably be at an advantage, because it is already established with stations in central positions in big towns. It must, however, always be at the disadvantage as regards mobility in a wider sense, that is to say, the ability to vary its route to suit requirements

5.—Speed.

As regards speed, the aeroplane has, of course, a substantial advantage over the railway, but the subject cannot be considered independently of the allied subjects of regularity and punctuality.

The actual speed of the carrying vehicle is not necessarily the measure of the speed with which a journey can be completed. This applies particularly to the carriage of goods which may be subjected to long terminal delays, especially if dealt with by a complicated system, such as that developed by railways.

One point to be remembered is that, so far as passengers are concerned, every journey involves incidental expenditure more or less inversely proportionate to the speed of conveyance. Up to the limit that can be covered in a day, the incidental expenditure is low. Beyond that limit a daily allowance must be made for hotel expenses or their equivalent.

This advantage of the speedier form of traffic does not always appear in any direct comparison of figures charged, but in some instances the incidental expenditure may make the method which charges the higher fare the cheaper form of transport. The incidental expenditure involved upon a trans-continental journey across Australia by rail would, for example, be considerable, and those involved in the same journey by air comparatively low.

6.—Frequency of Service.

For dealing with any given volume of traffic the small unit such as the aeroplane invariably has an advantage in this respect. It is for this reason that the railways use rail motors upon branch lines where traffic is not heavy. Frequency of service is, however, generally only obtainable as a result of additional expenditure, since the general rule is that the larger units are more economical per passenger or per ton carried.

7.—Punctuality and Regularity.

In these respects the railway must certainly continue to be at an advantage over the aeroplane, mainly because of its fixed track. The railway itself is not perfect, being particularly liable to delays on account of fog, but it is conceivable that something approaching perfection may be reached by the introduction of improved signalling systems.

Aeroplane services must apparently remain liable to variations in time of arrival due to the direction and strength of prevailing winds and further variations in time of starting due to weather conditions, and particularly to fog and gales. The more settled and dependable the climate where the proposed services are to be run, the less will these disadvantages be felt.

This factor appears to indicate that aerial transport should be capable of being developed with greater satisfaction and rapidity in some parts of the world than in others. The proverbially unstable weather conditions of Great Britain are, of course, unfavourable to regularity and punctuality of air services.

Provisional Conclusions.

The points mentioned in the preceding paragraph, and in that dealing with speed, vary in importance according to the length of the journey to be made. If, for instance, a journey only takes a few hours by railway, then a possible delay of a day or two in a competing aeroplane service would be almost fatal. On the other hand, if it is a question of saving, say, a fortnight out of three weeks, the loss of a day or two would not matter.

Thus, by way of provisional conclusions, the general analysis leads to the opinion that aeroplane services may be extensively used between points where traffic is not sufficient to justify railways. Also that such services may well compete successfully with the railway between higher class traffic provided that distances are great and the saving of time by the more rapid method therefore very considerable.

No general arguments can possibly alter the fact that for special services, where the value of time may be almost incalculable, the aeroplane would obviously be generally preferred, even if it is so subject to weather conditions as to make it impossible to employ it as the standard means of communication.



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AIRCRAFT FINANCE

CURRENT TOPICS.

Borrowing and the Treasury.

The Aircraft Industry is young: therefore it is liable to youthful indiscretions. At the same time, it is in the unique position of being compelled to prove its mettle and consolidate its future in these extraordinary times of stress and strife, so it must go warily. It is concerned with the announcement of the Treasury's New Capital Issues Committee.

This body which controls the raising of new capital and loans by public companies and other bodies has wakened up to the fact that its rules and regulations have been evaded. Companies have had the temerity to borrow money from their shareholders, such loans carrying options to convert into shares, without the requisite sanction of the Committee. As the Committee possesses absolute control in the matter, henceforth its permission must be obtained for such borrowing.

Pressing Requirements Sanctioned.

One must endorse this decision, because such borrowing is a flagrant contravention of the excellent object for which the Committee was originally conceived. Money is needed to carry on the war, and we must have as much money therefore as we can get consistent with the urgent requirements of ordinary business. Companies and public bodies who have development programmes in perspective must hold the necessary financing in abeyance until times are more propitious. If the project is of sufficient national importance to call for immediate financial assistance and would be jeopardised by any delay, the New Issues Committee would, one supposes, sanction an immediate demand for the requisite capital.

Arbitrary Powers.

No one will deny that the Committee performs a most important duty, and it is to be hoped it acts discreetly, magnanimously, and with due regard to the issues at stake. But it may be too arbitrary or may misjudge the position sometimes. Anyway, there is an interesting rumour on the point.

An Awful Example.

A big and very important manufacturing company has been turning out Government work, it may be emphasised, of a very essential kind. One department owes it something like three-quarters of a million sterling, and, for reasons best known to itself, is not making payments as expeditiously as could be desired. Another department puts forth a claim for a sum running close upon £300,000 and demands immediate payment, refusing to accept in satisfaction a portion of the claim on the original purchasing department.

In a Quandary.

An appeal by the company to its bankers for the requisite £300,000 is rejected, and not unnaturally, because the bank has done as much of this particular financing as could reasonably be expected of it. Meanwhile, the company cannot raise a loan in public to straighten out matters. Hence it is in a quandary. It would be amusing if it was not really so serious. We have heard of Government Departments that duplicate payments and get cross when they are told of this error. This is a variation and, from all accounts, an unfortunate one. It is almost inconceivable that such things could happen, but there is not the slightest doubt that some of the stories are not pure fiction. Co-ordination is certainly lacking in the public services, and a little business acumen would be useful.

Quieter Stock Markets.

After the debauch of recent weeks, the Stock Exchange is beginning to look a little tired. Buyers are no longer tumbling over each other in order to discover profitable employment for the money which they previously kept on deposit with their banker at a fairly remunerative rate of interest. It will be interesting to see whether values will hold up, especially when the expected German offensive is resumed.

An Active Aircraft Share.

Aircraft shares and the like are a trifle quieter, the noteworthy exception being Aircraft Manufacturing Participating "B" Preference shares. For these there has been a quietly insistent demand in the neighbourhood of 23s., based on the belief that the high profit-making capacity of the undertaking considerably enhances the possibility of the participation in profits.

Unabated strength has been maintained by Vickers shares at 46s., and here, again, there is quite a lot of talk of favourable developments.

Whitehead's Interim Dividend.

A dividend at the rate of 7 per cent. per annum (free of tax up to 5s. in the £) has just been announced by Whitehead Aircraft (1917), Ltd., on its Preference shares in respect of the half-year ended March 31st.

Big Banks and Industry.

There are to be more amalgamations, fusions, and working agreements in the British banking world in spite of the decision of the Committee which inquired into this question of amalgamation. We are not at all frightened by the bogey of a "money trust" in this country, but we are concerned with the question this concentration movement provokes: Do the huge banking combinations offer equal facilities to commerce and industry as the smaller type of bank?

The Coming Struggle.

There is a lot to be said for both the big and the moderate-sized bank. The former can help industry much better than the other if it chooses to do so. This is the era of big things, and when the war is over and the industrial war begins, we shall need powerful banking institutions with tentacles spread over the world. That is what will happen. The British banks promised to be more broadminded and more active than in the past. They have learned something from the disclosures of German banking methods. It is to be hoped they have discarded the former tone and practice of respectable aloofness.

NEW COMPANIES.

Haithwaite Aviation Co., Ltd.—Private company. Registered July 11th. Capital £1,000 in £1 shares. To take over the business of a manufacturer of and dealer in aeroplanes and parts thereof carried on by F. Haithwaite as a separate business at 10, Alfred Street, Leeds. The subscribers (each with one share) are:—F. Haithwaite, Gledholme, Cross Flatts Grove, Leeds, engineer; A. M. Wenman, 16, Grosvenor Place, Blackman Lane, Leeds, coppersmith. The first directors are:—F. Haithwaite and A. M. Wenman. Solicitor: E. F. Hart, 18, Park Lane, Leeds.

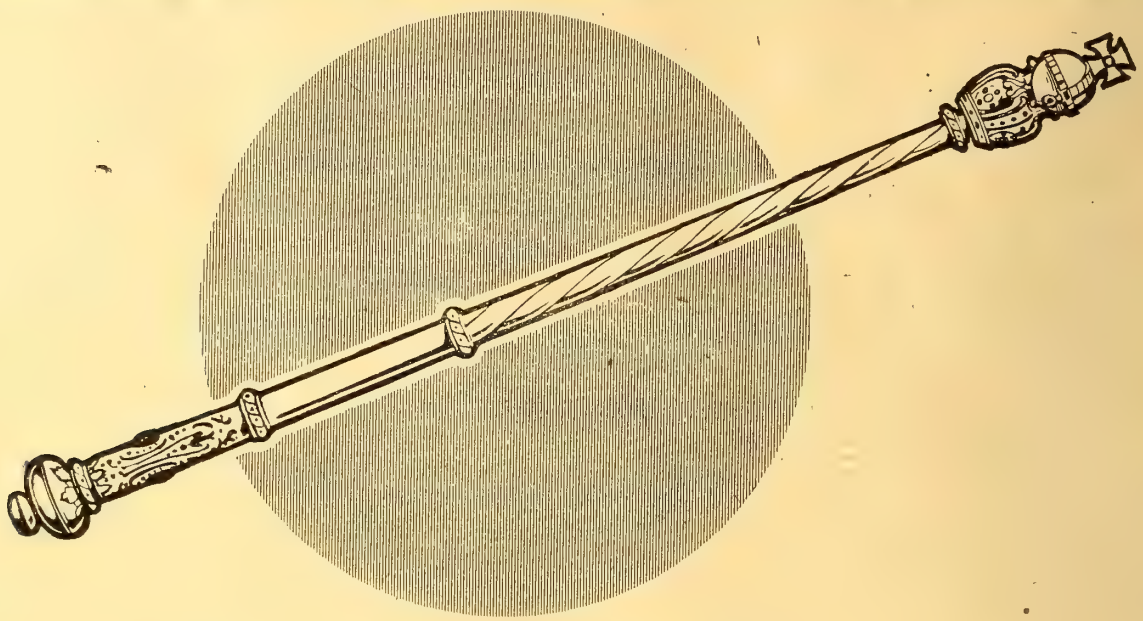
THE ITALIAN INDUSTRY.

At the beginning of July a general meeting of the Società An. Meccanica Lombarda was held. It was then decided to declare a dividend of 10 per cent. on the shares and to raise the capital to 8,000,000 of lire by raising the shares to the par value of 400 lire from 300 lire, the former price, for which purpose the writing-off fund is to be drawn upon to the extent of 1,500,000 lire, and by the issue of new shares of 400 lire to the amount of 2,000,000 lire. As is well known, this firm builds the S.A.M.L. biplanes among other implements of war.

THE AUSTRO-HUNGARIAN MAIL.

The "Pester Lloyd" has published an interview with the Hungarian Minister of Commerce respecting the new postal air service between Budapest and Vienna, which was timed to start on July 4th. The Minister says that the difficulties of delivering telegrams in Budapest have compelled him to restrict traffic. This has caused grave inconvenience, but the abolition of the telegraph post in Vienna, so far as this concerned Budapest and Hungary generally, was still worse. He therefore undertook to establish a postal air service between Budapest and Vienna which would be the first civil postal air service between those cities. The dispatch from Budapest occurs between 4 and 5 p.m. The return dispatch from Vienna occurs next morning, the arrival taking place between 7 and 8 a.m. in Budapest. The mails will be conveyed from the place of arrival in Budapest to the General Post Office by motor-car. Special stamps are to be issued for the air postal service. The stamps show the Parliament buildings and bear an inscription.

Besides this air postal service there will be established within six weeks a new air postal line in Hungary. There is already such a line between Vienna, Lemberg, and Kieff. The Minister therefore suggested, with a view to equality, a similar postal service between Budapest and Odessa. This service will now be established for the line Budapest-Arad-Kolozsvar. If the difficulties confronting the realisation of the whole plan are overcome, the service will be completed between Budapest and Odessa.



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(Continued from page 207.)

H. E. Johnston (Lt., British Columbia R., C.E.F.) is granted a temp. commn. as Sec. Lt. (A. and S.), and to be Hon. Lt., April 24th.

A. L. Coulson (Prob. Flt. Officer, late R.N.A.S.) is granted a temp. commn. as Sec. Lt. (A. and S.), May 29th.

The follg. Flt. Cadets are granted temp commns. as Sec. Lts. (A. and S.):—B. S. Case, May 24th; S. C. Mcleod, May 27th; A. G. Longson, May 29th; L. W. Thres, May 30th; P. F. Mitchell, N. S. Muir, O. T. Lashmore, W. Geary, May 31st; H. L. Prime, June 2nd; F. E. Watts, June 3rd; O. G. Gregson, J. T. Aitken, E. A. R. Lee, A. W. Fisher, P. L. Watney, June 4th; A. V. Cosgrove, F. W. Cannon, H. Walker, June 6th; G. H. Pitt, F. W Jones, H. A. Morley, H. W. F. Rendall, June 7th; G. E. Stevens, B. G. Lees, E. J. Freestone, June 8th; C. R. Plant, June 9th; E. H. Searle, June 11th; R. A. H. Lloyd, T. C. Herman, N. F. Bishop, June 12th; L. H. T. Ashburner, G. J. Farnworth, O. M. Smith, W. Cox, June 13th; A. S. G. Rodway, June 14th; H. E. Warner, June 20th.

The follg. Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (Obsr. Officers):—F. A. Lewis, N. M. Dales, T. S. Chilton, L. R. P. Backhouse, A. Lowe, June 12th; W. H. Bentley, B. Hurdus, June 21st; W. W. Hewitt, W. Forbes, June 23rd; H. C. J. Routledge, E. S. Coombes, R. Carnie, June 24th; E. H. Cooke, F. R. Oddy, June 29th.

The follg. are granted temp. commns. as Sec. Lts. (Obsr. Officers):—J. W. Lunn (Lt., Highland Cyc. Bn., T.F.), and to be Hon. Lt.; J. Rudkin (temp. Sec. Lt., Res. R. of Cav.); W. Tinsley (Sec. Lt., Lond. R., T.F.); H. R. Goss (temp. Sec. Lt., E. York. R.); H. E. Hinchliffe (temp. Sec. Lt., Manch. R.); G. T. Gauntlett (temp. Sec. Lt., R. War. R.); B. H. Smyth (Sec. Lt., Glouc. R., Spec. Res.); H. F. Weet (Sec. Lt., Lond. R., T.F.), June 12th; R. J. Hunt (Lt., Lond. R., T.F.), and to be Hon. Lt., June 21st; C. G. Stanley (temp. Sec. Lt., R. War. R.); E. L. Ward, M.C. (temp. Lt., R. War. R.), and to be Hon. Lt. June 27th; W. P. Cooper (Sec. Lt., W. York R., T.F.); E. F. V. Chard (Sec. Lt., Lond. R., T.F.); J. Collier (Sec. Lt., N. Lan. R., T.F.); J. C. Clark (Sec. Lt., Suff. R., T.F.); W. C. Day, M.C. (Lt., Middx. R., T.F.), and to be Hon. Lt.; J. D. Dick (temp Sec Lt., S. Wales Bord.); G. W. L. Day (Lt., R.E.), and to be Hon. Lt.; R. Galloway (Sec. Lt., Sco. Rif., Spec. Res.); C. A. Lucy (temp. Sec. Lt., attd. R. Fus.); H. L. Macdonald (temp. Sec. Lt., R. Highrs.); D. A. Mackenzie (Lt., C.F.A., C.E.F.), and to be Hon. Lt.; D. S. Robertson, M.C. (Lt., S. Lan. R., T.F.), and to be Hon. Lt.; B. Reading (temp Sec. Lt., York. R.); G. E. Rolleston (Sec. Lt., Leic. R., T.F.); W. V. Hunt (temp. Sec. Lt., M.G.C.), June 29th.

The follg. Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers):—G. T. Campbell, June 22nd; A. Randall, E. H. Clayton, K. J. W. Dennitts, N. F. Frome, T. S. E. Whittaker, E. M. Whithan, L. McCall, D. A. Watson, S. G. Watson, J. A. L. Rogers, J. E. Elliott, H. A. Record, M. W. Wakeman, R. F. G. Band, V. Lockey, C. E. Richardson, O. Plant, A. E. Jenkins, G. G. Gilby, F. C. Phillips, H. S. Howard, J. K. Holdsworth, A. Berry, J. C. Ferguson, A. C. Breingan, G. G. Shaw, H. Speed, T. E. T. K. Green, R. H. B. Greenyer, B. G. Stubbs, A. H. H. King, H. Faulks, July 6th.

The follg. Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (K.B.):—G. L. Barrett, June 10th; W. G. Piper, June 17th.

The notification in "Gazette," June 28th, regarding Sec. Lt. R. A. Arnott is hereby cancelled.

The notification in "Gazette," May 17th, regarding R. A. Hodgson is cancelled, as he retains the rank of Lt.

Lt. A. R. Croker (Lt., R.E., T.F.) relinquishes his commn. on ceasing to be empld., May 7th.

Capt. W. H. Gilroy relinquishes his commn. on acct. of ill-health, July 10th.

Capt. G. A. Thompson resigns his commn. on acct. of ill-health, rank of Capt., July 10th.

The follg. Lts. resign their commns. to resume their medical studies, and are granted the hon. rank of Lt.:—R. B. Salisbury, K. Y. Sinclair, July 10th.

Lt. D. C. Russell relinquishes his commn. on acct. of ill-health, and is granted the hon. rank of Lt., July 10th.

Lt. D. H. Simmons relinquishes his commn. on acct. of ill-health contracted on active service, and is granted the hon. rank of Lt., July 10th.

Lt. W. J. H. Morgan resigns his commn., July 10th.

ADMINISTRATIVE BRANCH.—Lts. to be temp. Capts. while empld. as Capts.:—G. S. D. M. Pape (from K.B.), T. D. S. Purdy, June 24th.

D. A. G. Dallas (Capt., Ind. Army) is granted a temp. commn. as Lt., and to be Hon. Capt., June 10th.

Sec. Lts. (Tech.) to be temp. Lts. while empld. as Lts.:—G. Weaver, May 11th; J. Black, June 29th.

Lt. (Hon. Capt.) C. J. Pyke to be Lt. (from Dir.), June 25th.

Lt. (Hon. Capt.) P. Bewsher, D.S.C., to be Lt. (from O.), July 1st.

Lts. (K.B.) to be Lts.:—D. S. Gray, June 28th; H. W. Bower, July 6th.

The date of appt. to a temp. commn. as Sec. Lt. of A. R. Fulton is April 1st, and not as in the "Gazette" of May 21st.

The follg. are granted temp. commns. as Sec. Lts.:—F. Grave (Qrmr. and Hon. Capt., Lond. R., T.F.), and to be Hon Capt., May 1st; R. M. Ferguson, S. L. Smith, July 5th; C. J. Beardow, E. J. K. Boden, C. F. Kavanagh, W. Muir, July 6th; G. Probert, H. G. Bill, W. Blakemore, S. F. Blanck, H. E. Brain, F. G. Brooker, G. W. U. Clissold, E. W. Deane, G. Dunn, H. E. Fenton, L. J. Ford, C. W. Garrod, E. B. Hodgkinson, P. S. Howard, E. W. Husband, A. H. V. Kingdon, S. E. Knight, R. W. Letchford, W. J. Meager, F. J. Nicholson, J. Norman, S. H. Pearch, S. T. Phillips, S. T. Pye, J. W. Savage, L. H. Simmons, H. L. Smith, L. J. Sterlini, F. G. Thompson, R. F. Tunmer, P. K. Whitehead, July 8th; E. J. H. Bluett (substituted for notification in "Gazette," June 25th); E. B. Roscoe, H. G. Cogle, July 10th.

The appt. of E. A. Berry to be Sec. Lt., notified in "Gazette" of May 14th, is antedated to April 14th

Capt. R. D. Bartlett (Lt., R.N.V.R.) relinquishes his commn. on ceasing to be empld., May 8th.

Sec. Lt. H. M. Donald is dismissed the service by sentence of a General Court-Martial, June 14th.

Sec. Lt. A. W. Buchan resigns his commn. to resume his medical studies, and is granted the hon. rank of Sec. Lt., July 10th.

The follg. Sec. Lts. resign their commns. and are granted the hon. rank of Sec. Lt.:—W. S. Dickson, E. McN. Hepburn, J. Kelly, J. McAllister, July 10th.

The follg. Sec. Lts. resign their commns:—J. E. Broadhead, F. Drake, J. A. Haywood, S. A. Pook, T. Rivers-Fry, C. M. Stone, July 10th.

TECHNICAL BRANCH.—A. Belton (Capt., R. Fus., S.R.), is granted a temp. commn. as Capt., and to be temp. Maj. while specially empld., April 1st.

Capt. (temp. Maj.) J. B. Vernon retains his temp. rank while empld. as Maj. (from Admin.), May 8th.

Lt. (temp. Capt.) G. F. Hervey, D.S.C., to be temp. Maj while empld. as Maj (from A. and S.), July 1st

Lts. to be temp. Capts. while empld. as Capts.:—J. A. P. Martin, A. V. Shewell, J. H. Turner, April 1st; G. F. Drudge, June 27th; R. M. Baird, June 29th; E. Plimley, July 3rd.

Capt. (temp. Maj.) A. E. Oxley relinquishes the temp rank of Maj. on appt. as Capt. (Tech.), May 20th. (Substituted for notification in "Gazette," June 4th.)

H. G. Thomas (temp Lt., R.E.) is granted a temp. commn. as Lt., and to be temp. Capt. while specially empld., April 1st.

H. V. Snook (temp. Sec. Lt., R.E.) is granted a temp. commn. as Lt., May 24th.

Sec. Lts. (Hon. Lts.) to be temp. Lts.:—P. Jeffrey, April 1st; V. A. Cooper, G. H. Crick, L. J. C. Lord, H. G. Wood, June 15th; A. C. H. Dashwood, W. L. Lancaster, June 16th; H. Alisebrook, F. C. Butler, D. R. Mitchell, June 21st.

Sec. Lts. to be temp. Lts.:—W. G Barnes (from Admin.), April 1st; J. E. H. Swain, June 15th; W. Allan, F. H. Goodwin, B. Rotherham, June 21st; (Hon. Capt.) C. C. Gilbert, June 27th; Lt. G. C. Heseltine (from A. and S.) to be temp. Lt., May 22nd.

Sec. Lts. (Admin.) to be Sec. Lts.:—W. L. Eveleigh, A. K. Murray, Marley, W. S. Sholl, June 22nd; A. F. Wilson, July 1st.

May 16th; H. V. Bullock, May 29th; B. F. T. Hare, June 1st; C.

The follg. Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts.:—H. J. Amery, April 1st; P. S Beaufor, June 18th.

J. C. Harrison (Capt., Lond. R., T.F.) is granted a temp. commn. as Sec. Lt., and to be Hon. Capt., June 18th.

J. Wilson is granted a temp. commn. as Sec. Lt., July 6th.

T. J. Fazackerley (temp. Lt., R.W. Fus.) is granted a temp. commn. as Sec. Lt., and to be Hon. Lt., April 22nd (Substituted for notice in the "Gazette" of May 24th).

Capt. (temp. Maj.) C. J. Price resigns his commn., and is granted the hon. raak of Maj., July 1st.

MEDICAL BRANCH.—The follg. are granted temp. commns. as Lts.:—A. K. Soutar, July 6th; F. H. Wallace, July 8th.

MEMORANDA.—Capt. M. Heckstall-Smith to be temp. Maj. whilst specially empld., June 19th.

Lt. (temp. Capt.) J. A. Carr, D.S.C., reverts to Lt. (Hon. Capt.) on ceasing to be empld. as S.O., 3rd Cl., June 15th.

The notification in "Gazette," June 7th, regarding Sec. Lt. A. R. Fulton is cancelled.

The appt. of the follg. Officers to the Roval Air Force is cancelled:—Engr. Lt.-Comdr. T. Curr (R.N.). Lt.-Comdrs. (R.N.V.R.):—A. S. Langley, J. E. Coates, J. A. Williams, T. S. Price, Lts. (R.N.V.R.):—H. G. L. de Whalley, S. H. Brazier, C. H. Swann, J. C. Mottram, F. C. Archer, J. Lilburn, G. H. Hannay, G. S. Hewett, S. J. Green, B. Turner, J. L. Potts (Sub. Lt., R.N.V.R.), C. V. Ingram (A.Pr. R.N.R.), R. J. M. Sennitt (W.O.).

WAR OFFICE, July 12th.

The following are included in a list of decorations and medals conferred by the King of the Belgians on members of the British Forces for distinguished services rendered during the course of the campaign. The King has given unrestricted permission in each case to wear the decorations and medals in question:—

CROIX DE GUERRE.

Capt A. J. R. Waller, Essex R. and R.F.C.

AUSTRALIAN IMPERIAL FORCE.—Capt. W. H Anderson, F.C.; Lt. B. J. Blackett, F.C.

AIR MINISTRY, July 12th

Staff Officer, 1st Cl.—(Air.)—Capt. D. Iron, and to be temp. Lt.-Col. while so empld., April 1st.

Staff Officers, 2nd Cl.—And to be temp. Majs. while so empld. if not already holding that rank (Air):—Lt. (temp. Capt.) W. H. S. Garnett, April 26th; Capt. C. S. McNab, June 29th; (P.)—Lt. (temp. Capt.) R. L. Kennedy, June 2nd.

Staff Officers, 3rd Cl.—Lt. (temp. Capt.) G. C Gold (from S.O. 3 Air Ministry), and to retain his temp. rank while so empld., June 8th; J. W. Aldridge (late temp. Maj. in Army), and is granted a temp. commn. as Capt., July 10th. (P.)—The rank and name of Lt. (temp. Capt.) S. J. Smith are as now described, and not as stated in "Gazette" July 2nd.

FLYING BRANCH.—Lts. (temp. Capts.) to be temp. Majs. while empld. as Majs. (A. and S.):—J. Forgan-Potts, C. H Hayward, July 8th; M. R. Buckland, C. P. O. Bartlett, D.S.C., July 12th; I. N. C. Clark, D.S.C., July 18th. Lts. to be temp. Capts. while empld. as Capts. (A. and S.):—E. L. Crowe, H. Kirby, April 2nd; T. C. Creaghan, J. L. M. de C. Hughes-Chamberlain, G. N. Moore, C. W. Odell, May 1st; (Hon. Maj.) J. A. C. Wright, May 18th; H. V. Robbins, M.C., May 21st; G. H. Armstrong, V. P. Cronyn, F. G. Garratt, R. H. S. Hunter, R. C. Kean, F. F. H. E. Kolligs, E. H. Marshall, M. M. Sisley, June 1st; J. D. Canning, June 27th; C. O. Bean, J. W Baker, L. M. Copeland, W. F. Findlay, J. Harper, P. W. B. Lawrence, R. G. Malcolm, M.C., P. L. Plant, J. Potter, H. Puckle, N. L. Robertson, D. A. A. Shepperson, H. Slingsby, July 1st; W. E. Green, C. Parry, H. N. Lett, July 2nd; W. H. Farrow, L. H. Short, July 3rd; S. P. Ball, M. Ballard, J. A. W. Binnie, L. G. Brazier, T. B. Bruce, W. R. Balden, E. S. T. Cole, C. Crawford, T. Hayes, W. J. Henney, L. M. Isitt, W. R. Jones, J. G. Kingsbury, P. J. Long, J. Parry, S. J. Stewart, B. V. S. Smith, M.C., O. H. D. Vickers, A. C. Wyness, F. C. A. Wright, V. Wigg, H. M. Yeatman, July 6th. Lts. (Hon. Capts.) to be temp. Capts. whilst empld. as Capts. (A. and S.):—S. R. Watkins, May 8th; G. W. Heming, June 6th; G. Breadner, E. R. Pritchard, T. G. C. Wood, D.S.C., July 1st; E. W. Broadberry, M.C., W. W. Leek, C. L. Philcox, C. B. Wainwright, July 6th; G. A. Gooderham, G. H. D. Gossip, J. A. Shaw, A. T. Sketchley, A. J. B. Tonks, C. R. Vaughan, A. G. Woodward, July 8th; Lt. (temp. Capt.) H. S. Paynter retains his temp. rank whilst empld. as Capt. (A. and S.) (from Ad.), July 5th; Lt. H. A. Edridge-Green to be Lt. (Dir.) (from Ad.), July 4th. Lts., Obsr. Officers, to be Lts. (A. and S.)—June 12th.—J. W. D. Melhuish, M.C., R. S. B. Beckett, (temp. Capt.) T. Edwards, and to be Hon. Capt. Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A. and S.).—M. L. Dunham, April 27th; U. T. McDonald, April 30th; C. R. Fraser, June 1st; G. H. Enderby, G. E. Dunn, June 2nd; J. J. Elder, June 4th; H. P. Robinson, June 9th; C. H. Reay, June 10th; W. Whatmore, A. E. Sharp, H. Hartley, J. Macintyre, J. V. Lewis, H. J. Smith, June 11th; L. Duncombe, T. McCarthy, D. J. Tarling, F. J. Belley, C. C. A. Daniel, L. C. Ellis, R. C. Hardy, June 12th; D. L. Little, C. E Smith, S. E. Kilbey, K. McC. Dolbey, O. P. Gosling, W. H. Mitchell, R. W. Davis, G. P. Dymond, C. E. Howley, J. G. Kenyon, W. L. Chapman, W. F. Bates, J. G. Dennis, C. N. Prentice, A. T. Guy, G. J. N. Norman, June 13th; N. M. McDougall, G. Lyles, W. H. Clarkson, G. Muir, D. A. Newson, J. C. Gallake, R. Tickle, A. G. Hill, H. M. Towlson, D. J. Wilks, F. L. W. Dowling, E. R. N. Main, N. H. Bain, J. Town, F. A. Lygo, S. A. Dismore, R. Smith (date of 1st commn., Aug. 12th, 1917), S. N. Jacobson, C. N. Drew, C. H. Howitt, J. Baillie, C. L. Stewart, H. S. R. Burt, A. D. Kiernander, T. R. Michelson, J. Sewell, W. C. Marsh, J. A. Seldon, W. Ling, W. Knight, F. M. Honore, H. R. Vennard, J. Harston, June 14th. The follg. are granted

temp. commns as Sec. Lts. (A. and S.):—A. S. Wright (temp. Sec. Lt., attd. Essex R.), A. L. Turman (Sec. Lt., Notts. and Derby R.), June 11th; J. L. Graham (Sec. Lt., R. Scots., T.F.), G. W. E. Whitehead (Lt., R.F.A.) and to be Hon Lt., June 12th; E. W. Cowdery (Sec. Lt., R.F.A., Spec. Res.), C. L. Childs (Lt., Bord R., T.F.) and to be Hon. Lt., H. G. Garrett (temp. Sec. Lt., attd. K.R.R.C.), June 13th; C. B. Wilson (Sec. Lt., Lan. Fus., T.F.), E. L. Wilson (Sec. Lt., Manch. R., T.F.), H. L. Jackson (temp. Lt., K.O. Malta R.), and to be Hon. Lt., W. L. F. Nuttall (temp. Sec. Lt., Labour Corps), P. E. Bishop (Capt., Can. A.P.C., C.E.F.), and to be hon. Capt., W. Cameron (temp. Sec. Lt., Northd. Fus.), H. C. Heintzman (Lt., Can. F.A., C.E.F.), and to be Hon. Lt., A. C. Cook (Lt., Durh. L.I., T.F.), and to be Hon. Lt., E. Turnbull (Lt., R.F.A., Spec. Res.), and to be Hon. Lt., June 14th; D. H. O Edmunds, June 17th; H. Terrell (late Lt., Ind. Army), and to be Hon. Lt., July 9th. Flt. Cadets granted temp. commns. as Sec. Lts. (A. and S.):—C. Dotzert, June 3rd; S. McKeever, June 4th; R. J. D. S. Straw, June 5th; N. R. E. Mattingly, June 7th. Sec. Lts. (late Gen. List, R.F.C., on prob.) confirmed in their rank as Sec. Lts. (Obsr. Officers):—H. J. Tinker, June 25th; W. H. Holton, June 26th; S. O. Franks, R. E. Linder, July 6th. The following are granted temp. commns. as Sec. Lts. (Obsr. Officers):—Flt. Cadet W. H. Currie, May 18th; G. L. Warner (Lt., Quebec R., C.E.F.) and to be Hon. Lt., June 22nd; H. Walpole (Sec. Lt., Notts and Derby R., T.F.), June 25th; A. Callender (temp. Sec. Lt., attd. Middx. R.), June 30th; S. T. Goodman, M.C., D.C.M. (temp. Sec. Lt., R. Fus.), H. L. Williams (temp. Sec. Lt., R. W. Fus.), J. H. Crowe (temp Sec. Lt., S. Staff. R.) July 6th. Follg. prob. Obsr. Officers (late R.N.A.S.) granted temp. commns. as Sec. Lts. (Obsr. Officers):—R. H. S. Calver, F. J. Hopwood, F. G. Porter, R. C. Emett, W. J. Ward, H. Saunders, L. G. Cathrall, June 4th. Follg. are granted temp. commns. as Sec Lts. (K.B.):—L. A. Sterling, M.C. (Lt., R.F.A., Spec. Res.) and to be Hon. Lt., J. McGilchrist (Sec. Lt., R.G.A., Spec. Res.), June 12th; Lt. F. J. B. de Sales La Terriere (Lt. Lancers) relinquishes his commn. on ceasing to be empld., June 22nd; the initials of Sec. Lt. A. J. Macqueen are as now described, and not as in the "Gazette" of July 5th. Follg. Sec. Lts. relinquish their commns., having been found permanently unfit as Pilots or Obsrs:—E. W. Royce-Reddall, G. H. Brown, P. Collinson, J. A. Biddle, G. Paterson, C. J. Hooley, J. B. Bonser, F. Steel, A. C. Cash, S. Bowden, T. Bailes, R. S. Fitch, F. G. M. Stennett, F. H. K. Pearson, S. Bennett, P. R. Paul, A. Purdy, F. Hargraves, O. H. Basher, H. V. Whittaker, J. Murphy, J. W. Waterworth, D. W. S. Waite, A. Faggin, R. A. Loader, J. M. Waterson, J. A. Herrara, F. F. Archer, H. H. Beeby, F. W. Smith, C. H. Ashworth, F. J. L. Bishop, W. E. Weeks, July 13th; Capt. W. C. Ault relinquishes his commn. on account of ill-health, and is granted the hon. rank of Capt., July 13th; Lt. G. F. Hubbard relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Lt., July 13th; Lt. S. Pickford relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lt., July 13th; Lt. A. A. J. Quennell resigns his commn., July 13th; Lt. H. R. Large relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lt., July 13th.

Administrative Branch.—Lts. (temp. Capts.) to be temp. Majs. whilst empld. as Majs.:—E. Graham, C. F. Yeomans, July 1st. Lts. to be temp Capts. whilst empld. as Capts.:—J. E. Catherall, K. A. Meek, April 1st; C. H. Cocup, April 4th; H. E. Tee, April 7th; H. C. Pyper, May 25th. Sec. Lts. to be temp. Capts. whilst empld. as Capts.:—F. C. Payne, April 3rd; (Hon. Lt.) F. C. Staines, April 19th. The follg. are granted temp. commns. as Lts.:—J. S. Bowler (temp. Lt., A.P.D.), W. C. Croydon (temp Lt., A.P.D.), April 1st; E. Colman-Brown (temp. Lt., K. African Rifles), June 10th; S. J. Martin (late Lt. R. Defence C.), July 8th. Sec. Lts. to be temp. Lts. whilst empld. as Lts.:—G. L. Bennet, June 22nd; (Hon. Lt.) L. M. T. Griffin, June 24th; M. M. Merriman, July 5th. Lts. (O.) to be Lts.:—A. W. C. Cartwright, April 1st; W. D. Lauder, M.C., July 3rd. The follg. are granted temp. commns. as Sec. Lts.:—J. C. Macdonald, April 8th; C. H. Marston, April 15th; E. Sparshott, June 7th; A. Chouffot, F. Wheatcroft, E. Roebuck, C. P. Brown, J. E. Sankey, J. T. Brumwell, C. Capel, L. T. Holmes, F. G. Laight, J. S. McLeod, R. D. Ogden, H. E. G. Richards, H. B. Smith, J. C. Sword, G. M. Washbourne, W. R. Watt, W. E. Garden, E. J. Gordon, R. G. Hollway, E. Holt, H. M. Lonsdale, J. Mellor, C. G. A. Poole, A. K. Spens, W. E. E. Stephens, J. R. Turner, C. W. Wheeler, R. C. R. Wilde, July 3rd; G. S. Crowther, F. Weekes, July 8th; G. K. Austin, G. T. Clarkson, H. G. Cogle, W. C. Faulkner, H. H. Peppercorn, E. B. Roscoe, July 10th. The date of appointment of Sec. Lt. H. R. White is July 8th, and not as in the "Gazette" of June 25th; Sec. Lt. A. McC. Goddard (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt., April 26th. Notification regarding H. Willis in "Gazette" of June 25th is cancelled. The date of appointment of Sec. Lt. F. C. Payne is April 2nd, and not as in the "Gazette" of May 17th; Sec. Lt. R. W. Boyce relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., July 13th; Sec. Lt. E. B. Cogswell relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Sec. Lt., July 13th. The follg. Sec. Lts. resign their commns.:—J. W. V. Alstyne, W. H. Southwood, July 13th.

Technical Branch.—Capt. (temp. Maj.) G. Stevens retains his temp. rank while empld. as Maj., May 21st; Lt. H. J. Poole to be temp. Capt while empld. as Capt., May 29th; Sec. Lts. to be temp. Capts. while empld. as Capts.:—F. E. Cooper, R. G. Whitcombe, June 27th; C. Shears, July 1st; Lt. (temp. Capt.) F. C. Mears to be Capt. (from K.B.), June 7th; Capt. A. H. Binyon to be Capt. (from Ad.), June 24th; Sec. Lt. (Hon. Lt.) J. A. Pritchard to be temp. Lt. while empld. as Lt. (April 2nd; Lt. K. L. Williams to be Lt. (from A. and S.), June 24th; Lts. (A. and S.) to be Sec. Lts. and to be Hon. Lts.:—J. E. Jones, April 9th; W. H. Jones, June 20th; Sec. Lt. F. N. Lynch-White (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt., May 17th; Lt. L. Collier from (O.) to be Sec. Lt. and to be Hon. Lt., May 5th; W. H. S. Elliott is granted a temp. commn. as Sec. Lt., July 10th. Sec. Lt. A. W. Hemphill (Lt., R.F.A., S.R.) relinquishes his commn. on ceasing to be empld., June 22nd; Capt. (temp. Maj.) W. C. Power resigns his commn., and is granted the hon. rank of Maj., July 13th.

Medical Branch.—A. Paling is granted a temp. commn. as Maj., July 12th; D. Guthrie is granted a temp. commn. as Capt., May 1st. The follg. are granted temp. commns. as Lts.:—E. L. Bunting, A. Read, July 10th.

Memorandum.—Lt. (temp. Maj.) J. E. L. Wrench, C.M.G., relinquishes the appt of S.O., 2nd Cl., at Air Ministry, but to retain his temp. rank while spec. empld., May 14th.

FROM THE COURT CIRCULAR.

Buckingham Palace, July 10th.

The following was introduced into the presence of The King, when His Majesty invested him with the Insignia of the Distinguished Service Order:—

Major Noel Hamilton, R.A.F.

The King then conferred decorations as follows:—

The Military Cross and Bar.

Capt. Andrew Beauchamp-Proctor, R.A.F.

The Military Cross

Capt. John Palethorpe, R.A.F.
Lt. William Harvey, Royal Dublin Fusiliers, attd R.A.F.
Lt. Sedley Williams, Devonshire Regt., attd. R.A.F.

* * *

Lt. Sedley Williams (Devonshire Regiment, attd. R.A.F.) had the honour of being received by His Majesty.

Buckingham Palace, July 12th.

The 1st Royal Air Force Band, under the direction of Capt. Claud Powell, had the honour of playing a selection of music in the forecourt during luncheon.

OFFICIAL COMMUNIQUES.

NAVAL.

Official Communiqués.

July 9th.—A British submarine patrolling off the East Coat of England was attacked on the afternoon of July 6th by five enemy seaplanes with bombs and machine-gun fire. It is much regretted that an officer and five men were killed. The submarine herself suffered only very slight damage, and was towed back into harbour by another submarine.

The Secretary of the Admiralty issued the following announcement on June 9th with reference to operations by Royal Air Force contingents working with the Navy:—

Enemy aircraft have been fairly active. One of our bombing formations was attacked by 16 hostile machines, three enemy machines being destroyed and three others driven out of control. All our machines returned safely.

Three of our large seaplanes on anti-submarine patrol were attacked by seven hostile machines. During the engagement, which lasted 55 minutes, two enemy machines were destroyed. Although damaged, our machines returned safely.

July 12th.—In home waters, during the period July 8th-10th, anti-submarine, hostile aircraft, and escort patrols have been maintained.

During raids on enemy docks and works eight tons of bombs have been dropped.

One enemy aircraft was destroyed. All our machines returned safely.

Hostile aircraft attacked Dunkirk during the night of 7th-8th; no material damage was done.

Information has been received that an aerial attack was carried out on Constantinople on July 7th. Half a ton of bombs was dropped. All our machines returned safely.

Dispatches now to hand from the Mediterranean and Aegean contain information of considerable activity on the part of aircraft working under the Navy in these waters.

British machines, in co-operation with Greek naval machines, have carried out anti-submarine patrols and reconnaissances from the various stations in the Aegean.

Kuleli Burgas bridge and station on the Oriental Railway in Bulgaria—upon which a quarter of a ton of bombs was dropped recently—are now known to have been badly damaged.

MILITARY.

G.H.Q. Communiqués.

July 9th, 7.55 p.m.—In spite of low clouds in the morning of July 8th and thunderstorms later in the day, our aeroplanes accomplished a good deal of photographic observation and reconnaissance work during the intervals of fine weather.

Enemy activity in the air was slight. Seven German machines were destroyed and six driven down out of control.

Four of our machines are missing.

Nineteen tons of bombs were dropped, principally on railway connections at Roulers, Tournai, and Wavrin (north-east of La Bassée), and on dumps at Warneton and Bac St Maur.

Practically no flying was possible at night.

July 10th, 8.20 p.m.—Work in the air was interrupted on July 9th by showers of rain and low clouds, but photography and reconnaissances were carried out by us as usual, and many hostile batteries were engaged with aeroplane observation.

Enemy aircraft were active on the northern part of our front, and a number of combats took place, in which nine German machines were destroyed and one was driven down out of control. In addition, a hostile scout was brought down by anti-aircraft fire.

In the course of the day we dropped 14 tons of bombs on selected targets over the line, two tons falling with good effect on Lille Junction and one and a half tons on Bruges docks. Three of our machines are missing.

During the following night three tons of bombs were dropped on enemy railways and camps without loss to us.

July 11th, 8 p.m.—On July 10th seven enemy machines were destroyed by us and six others were driven down out of control.

Four of our machines are missing.

Heavy showers interrupted progress of aerial observation and photography, but, nevertheless, a good deal of this work was accomplished whenever the sky cleared, and, in addition, 10 tons of bombs were dropped by us during the day on different targets.

Rain prevented flying at night.

July 12th, 7.38 p.m.—On July 11th heavy rainstorms limited activity in the air on both sides, but our machines carried out reconnaissance work and observation for the fire of our guns whenever brighter intervals permitted.

Nine tons of bombs were dropped on railway junctions behind the German lines.

Three hostile machines were destroyed during the day and two driven down out of control.

Three of our machines are missing.

Night flying was impossible.

July 13th, 7.55 p.m.—Low clouds and heavy rainstorms prevailed on the Western front on July 12th. Enemy aircraft showed no activity, and our own machines could only carry out observation work for the artillery during the brief intervals of brighter weather.

There were no combats or casualties.

At night, in spite of high wind and an overcast sky, our aviators carried out some useful reconnaissances and dropped four tons of bombs.

July 14th, 7.45 p.m.—Twelve enemy aeroplanes were destroyed by us on July 13th, and four driven down out of control.

Three of our machines are missing.

A good deal of reconnaissance and observation work was carried out by our aviators in fine intervals, and four and a half tons of bombs were dropped by them during the day.

On the night of July 13th-14th our bombing machines were very active. Over 1,100 bombs, weighing in the aggregate 19 tons, were dropped upon enemy camps, railway lines, trains, transport, and billets.

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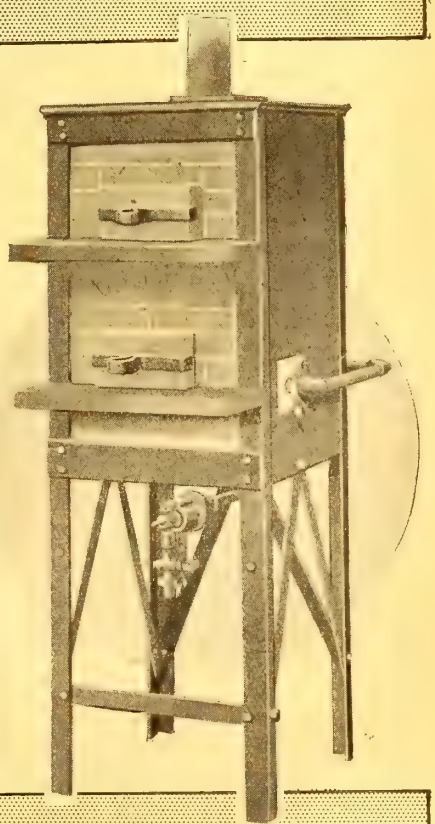
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All our night-flying machines returned safely.

July 15th, 7.58 p.m.—On the morning of July 14th our aeroplanes completed several reconnaissances and carried out much observation for our artillery The afternoon was wet and stormy.

The sidings at Roulers, the ammunition dumps at Warneton and Bapaume, the docks at Bruges, and dredging parties at Zeebrugge were heavily bombed.

Nine hostile machines were brought down, and three balloons shot down in flames.

Five of our machines are missing.

WAR OFFICE COMMUNIQUÉ.

July 9th.—The G.O.C. British Forces Macedonia reports:—

On June 28th a hostile aeroplane crashed near Furka (west of Lake Doiran). On June 29th our machines bombed Hudova aerodrome (Vardar Valley). Bombs were observed to burst among the hangars. On July 7th an enemy aeroplane was brought down near Gilimenli (north-east of Lake Doiran).

During the month of June our aeroplanes shot down eight hostile machines, and drove down five others out of control.

We lost only one machine.

AIR FORCE.

AIR MINISTRY COMMUNIQUÉS.

July 10th.—On the 8th inst. our machines successfully bombed an enemy aerodrome, bombs being observed to burst on the sheds and hangars.

During the night of 8th-9th the enemy's aerodromes were again attacked with good results, two hangars being reported as having been set on fire. Trains and searchlights were attacked from a low altitude.

All our machines returned safely.

July 11th.—This morning one of our squadrons bombed the railway sidings at Offenburg. Some good bursts were observed.

All our machines returned safely.

July 12th.—During the night of 11th-12th inst. our machines successfully bombed three enemy aerodromes, at two of which fires broke out. Many rounds were fired from machine-guns at trains, searchlights, and other military objects.

On the 12th inst. the railway sidings at Saarburg (10 miles south of Trèves) were attacked.

All our machines returned safely.

THE CASUALTY LIST.

MILITARY.

Reported July 11th.

CANADIAN FORCES.—PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED OR DIED OF WOUNDS.—Melanson, Lt. A. J., Can. For. Corps. attd. R.A.F.

WOUNDED.—Snow, Lt. C. H., N.S. Regt., attd. R.A.F.

MISSING.—Eaton, Lt. E. C., Sask. Regt, attd. R.A.F.; Murray, Lt. K. W., B.C. Regt., attd. R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR IN GERMAN HANDS.—Carter, Maj. A. D., D.S.O., N.B. Regt., attd. R.A.F.; White, Capt. P. R., E. Ont. Regt., attd. R.A.F.

Reported July 13th.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Pender, Capt. W. G., M.C., R.F.C.

AUSTRALIAN FORCE.—KILLED.—Brook, Lt. A. O'C., Aust. Flying Corps.

DIED.—Perry, Sec. Lt. G. D., Aust. Flying Corps.

WOUNDED.—Kerr, Lt. P. H., Aust. Flying Corps.

CASUALTIES AMONG N.C.Os. AND MEN.

THE DATES ARE THOSE OF THE OFFICIAL LIST.

AUSTRALIAN IMPERIAL FORCE.

WOUNDED.

July 15th.—F.C.—McGown 1917 J. C.

The following soldiers, who were prisoners of war in Germany, have arrived in Holland for internment:—

July 15th.—R.F.C.—Attwater, 2202 S.; McMaster 1840 D.

Reported July 16th.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Allen, Sec. Lt. C., R.F.C. * * *

Reported July 12th.

The following officer, who was a prisoner in Germany, has now arrived in England:—

Wood, Lt. R., W. York. R. and R.F.C.

AIR FORCE.

Reported July 10th.

DIED OF WOUNDS.—Jackson, Sec. Lt. H. A. B., R.A.F.
Mousley, Sec. Lt. O. O., R.A.F.

DIED.—MacDonald, Lt. G. O., R.A.F.
Prince, Sec. Lt. W. F. J., Lond. R., attd. R.A.F.
Westcott, Sec. Lt. W. E., R.A.F.

WOUNDED.—Drummond, Lt. J. E., R.A.F.; Dyson, Sec. Lt. H., R.A.F.; Mundy, Lt. F. W., Bucks Yeo. and R.A.F.

MISSING.—Arnold, Sec. Lt. J., King's L'pool R., attd. R.A.F.; Bradley, Lt. H. B., R.A.F.; Daltrey, Sec. Lt. F., R.A.F.; Nightingale, Lt. E., R.A.F.; Pontin, Lt. S. C. M., R.A.F.; Roberts, Lt. T., R.A.F.; Stubbs, Lt. W. H., R.A.F.

Reported July 11th.

KILLED.—Jenkins, Sec. Lt. W. W. L., R.A.F.
Morck, Sec. Lt. L. S., R.A.F.
Marshall, Lt. W. E. I., A.S.C. (T.) and R.A.F.

DIED OF WOUNDS.—Marsh, Sec. Lt. C. A., S. Lancs. R., attd. R.A.F.
McDonald, Lt. H., R.A.F.

WOUNDED.—Chick, Capt. J. S. (M.C.), R.A.F.; Cogan, Sec. Lt. J. A., R.A.F.; Creighton, Sec. Lt. H. H., R.A.F.; Robertson, Sec. Lt. A. W., R.A.F.

MISSING.—Benson, Sec. Lt. D. G., R.A.F.; Bryan, Lt. F. F. H., R.A.F.; Davis, Sec. Lt. H. C., Essex R., attd. R.A.F.; Doe, Lt. J. E., R.A.F.; Elvin, Sec. Lt. A. J., R.A.F.; Jones-Lloyd, Lt. O. J. F., R.A.F.; Muirden, Lt. N. H., R.A.F.

Reported July 12th.

KILLED.—Stokes-Rees, Lt. P. G., R.A.F.
Watson, Sec. Lt. W. E., R.A.F.

DIED OF WOUNDS.—Stephens, Sec. Lt. H. H., R.A.F.

DIED.—Von Poellnitz, Maj. H. W., Linc. R., attd. R.A.F.

WOUNDED.—Anderson, Lt. P. W., R.A.F.; Chambers, Sec. Lt. J. A., R.A.F.

MISSING.—Brand, Lt. F. R., R.A.F.; Cabburn, Lt. F., R.A.F.; Chapin, Lt. E. A., R.A.F.; Forsyth, Capt. W. A., R.F.A., attd. R.A.F.; Goodyear, Sec. Lt. C. R. F., R.A.F.; Sweet, Lt. G. A., R.A.F.

Reported July 13th.

KILLED.—Dowling, Sec. Lt. J. W., R.A.F.
Dunham, Sec. Lt. M. L., R.A.F.
McDowall, Sec. Lt. H. S., R.A.F.
Robinson, Sec. Lt. H. P., R.A.F.

DIED OF WOUNDS.—Haye, Sec. Lt. R. G., R.A.F.

WOUNDED.—Colley, Sec. Lt. A., R.A.F.; Davey, Maj. H. B. (M.C.), N. Staffs. R. and R.A.F.; Franklin, Lt. W., R.A.F.; Wright, Sec. Lt. J. E. T., Leic. R. and R.A.F.

MISSING.—Boothman, Sec. Lt. C. D., R.A.F.; Browne, Lt. J. S. McD., R.A.F.; Ganter, Lt. F. S., R.A.F.; Welinkar, Lt. S. K. C., R.A.F.; Wiggins, Sec. Lt. T., Lancs. Fus., attd R.A.F.

Reported July 16th.

KILLED.—Burch, Lt. R. S., R.A.F.
Garlick, Sec. Lt. T., R.A.F.
Heritage, Sec. Lt. H. A., Lond. Sco. and R.A.F.
Tanner, Sec. Lt. F. C., R.A.F.

WOUNDED.—Holleran, Lt. O. C., R.A.F.; Pearson, Sec. Lt. G. A., Arg. and Suthd. Highrs. and R.A.F.; Ryles, Sec. Lt. A. N., R.A.F.; Stewart, Sec. Lt. P. C., R.A.F.

MISSING.—Archibald, Sec. Lt. W. R., R.A.F.

SECOND LIST.

KILLED.—Burns, Lt. J. R. (M.C.), Sco. Rif. and R.A.F.
Dallas, Maj. R. S. (D.S.O., D.S.C.), R.A.F.
Goddard, Sec. Lt. F. E., R.A.F.
Jarvis, Sec. Lt. E. M., R.A.F.
Law, Lt. J., R.A.F.
Noad, Sec. Lt. T., R.A.F.
Tatton, Capt. E. H., R.A.F.

WOUNDED.—Amory, Lt. W., R.A.F.; Bain, A. M., R.A.F.; Dalton, Capt. A. H., 3rd Hrs. and R.A.F.; Hartley, Capt. A. E., R.A.F.; Johnson, Sec. Lt. J. M., R.A.F.; Lewis, Sec. Lt. C. J., R.A.F.; Risk, Sec. Lt. J. B., R.A.F.; Scully, Sec. Lt. N. R., R.A.F.; Tremayne-Pearse, Sec. Lt. W. B., R.W. Kent R. and R.A.F.; Williams, Sec. Lt. A., R.A.F.

MISSING.—Bartlett, Lt. A. F., R.A.F.; Brown, Lt. E. M., R.A.F.; Gordon, Sec. Lt. C. A., Yorks and Lancs R., attd. R.A.F.; McLeod, Lt. G. D., R.A.F.; Steele, Sec. Lt. T. L., R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONER.—Dawes, Sec. Lt. A. F., R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED BELIEVED PRISONERS.—Forder, Lt. E. G., R.A.F.
Patrick, Lt. W. D., R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONERS.—Burnard, Sec. Lt. R. A., Lond. R. (T.F.), attd. R.A.F.
Lane, Sec. Lt. L. C., R.A.F.
Lewis, Sec. Lt. D. G., R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED BELIEVED WOUNDED AND PRISONERS.—Hampton, Lt. P. R., R.A.F.
Hunter, Lt. H. C., R.A.F.
Robinson, Sec. Lt. B. W., R.A.F.

BELIEVED WOUNDED AND PRISONER.—Bott, Capt. A. J., R.G.A. (S.R.) and R.A.F.

PRISONERS.—Bankes, Lt. H. V. N., R.E. and R.A.F.
Fitzgibbon, Sec. Lt. C. J., R.A.F.
Ratliff, Sec. Lt. P. G., R.A.F.

THIRD LIST.

KILLED.—Bowick, Lt. W. R., R.A.F.
Brewer, Sec. Lt. T. E., R.A.F.
Jones, Lt. M. G. (M.C.), Northd Fus. and R.A.F.
Scott, Lt. G. M., R.A.F.

DIED OF WOUNDS.—Pither, Capt. S. E., K.O.S.B., attd. R.A.F.

DROWNED.—Nickells, Sec. Lt. C. C. G., R.A.F.

WOUNDED.—Bayly, Sec. Lt. C. J., R.A.F.; Foster, P/F/O H. E., R.A.F.; Raby, Sec. Lt. T. D., R.A.F.; Rivett-Carnac, Lt. W. J., R.A.F.; Storrey, Capt. A., A.S.C. and R.A.F.; Storrey, Lt. J. E., R.A.F.; Thursfield, Sec. Lt. J. T., R. War. R. attd. R.A.F.

MISSING.—Belgrave, Capt. J. D. (M.C.), Oxf. and Bucks L.I. and R.A.F.; Brown, Sec. Lt. J. L., R.A.F.; Legge, Sec. Lt. W., R.A.F.; Lewis, Sec. Lt. R. G., R.A.F.; McKenzie, Sec. Lt. A., R.A.F.; Nicholas, Sec. Lt. E. M., R.A.F.; Thompson, Sec. Lt. G. F., R.A.F.; Weaver, Capt. J., R.A.F.

FOURTH LIST.

KILLED.—Coape-Arnold, Lt. R. de N., S. Staffs R. and R.A.F.
Cordiner, Sec. Lt. G. G., R.A.F.
Davies, Sec. Lt. A. C., R.A.F.
Holt, Lt. C. T., R.A.F.

DROWNED.—Lomax, Sec. Lt. L. J., R.A.F.

WOUNDED.—Byron, Lt. J. F., Lancs Fus., attd. R.A.F.; Parmelee, Sec. Lt. C. G., R.A.F.

MISSING.—Cocking, Sec. Lt. L. G., R.A.F.; Fulton, Sec. Lt. J., R.A.F.; Gray, Sec. Lt. G. M., R.A.F.; Robinson, Lt. J. C., R.A.F.; Sheldon, Lt. C. S., R.A.F.; Webster, Lt. J., R.A.F.

Reported July 17th.

KILLED.—Cox, Sec. Lt. W. J., R.A.F.
Harvey, Sec. Lt. C. A., R.A.F.
Gitsham, Lt. J., R.A.F.
Pemble, Sec. Lt. F. P., R.A.F.

WOUNDED.—Cullen, Sec. Lt. R. J., Black Watch and R.A.F.; Forsyth, Lt. J. C., M.C., Royal Highrs. and R.A.F.; Harman, Lt. C. W., R.A.F.; McNeaney, Sec. Lt. J. H., R.A.F.; Power, Sec. Lt. H. E., E. Surr. R., attd. R.A.F.; Whitmarsh, Sec. Lt. J. W., R.A.F.; Wilson, Lt. E. B., R.A.F.

MISSING.—Austin, Lt. H., R.A.F.; Garrett, Lt. A. L. R.A.F.; Jenyns, Sec. Lt. C. G., R.A.F.; McMillan, Lt. C. McW., R.A.F.

CASUALTIES AMONG N.C.Os. AND MEN.

THE DATES ARE THOSE OF THE OFFICIAL LIST.

KILLED.

July 13th.—Boyack 99851 Serjt. A. J. (Dundee); Braithwaite 38355 3rd Cl. Air Mech. M. (Great Harwood); Horton 114149 2nd Cl. Air Mech. W. (Manchester); Meldrum 105812 3rd Cl. Air Mech. D. (Edinburgh); Rankin 76198 2nd Cl. Air Mech. W. S. (Glasgow).

WOUNDED.

July 13th.—Baker 251705 2nd Cl. Air Mech. H. F. (Leyton); Blackmore 111232 3rd Cl. Air Mech. W. (Wavertree); Bowerman 65021 2nd Cl. Air Mech. A. F. (Starcross); Evans 252116 Pte. R. L. (Reading); Hall 93513 Serjt. J. H. (Leeds); Harris 55949 2nd Cl. Air Mech. C. C. (Kensington); Holloway 38563 Cpl. C. W. (Leeds); Mulford 60225 1st Cl. Air Mech. A. R. (Wantage, Berks.); Pascoe 246131 2nd Cl. Air Mech. W. H. (Redruth); Rosen 89628 2nd Cl. Air Mech. S. (Bow, London); Wells 69048 3rd Cl. Air Mech. R. A. (Shoeburyness); White 2680 Temp Serjt.-Maj. A. W. (Gosport).

MISSING.

July 13th.—O'Neill 236154 Serjt. W. (Dublin).

PERSONAL NOTICES.

NAVAL.

DEATH.

PATTISSON.—Observer Sub-Lt. William Laurence Hill Pattisson, D.S.C., R.N., who was reported missing on March 16th, is now unofficially reported to have died of wounds the following

A.B.C.

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day in the German Military Hospital, Le Cateau. He was the younger son of Mr. and Mrs. F. L. Pattison, of Purbright, Chislehurst. Aged 20.

BIRTH.

SITWELL.—On July 8th, at Strand Cottage, Winchelsea, Margery, the wife of Major W. G. Sitwell, D.S.C., R.A.F., of a son.

* * *

The following appointment was made at the Admiralty:—

JULY 13th.—R.N.V.R.—Sec. Lt. (R.A.F.).—H. T. Nidd granted temp. commn. as Sub-Lt., seny. July 12th

MILITARY.

DEATHS.

BELGRAVE.—Capt. James Dacres Belgrave, M.C., Oxford and Bucks L.I., attached R.A.F., was the second son of Mr. and Mrs. Dalrymple J. Belgrave, of County End, Chinnor, and was 21 years old. He was educated at Bedford School and Sandhurst, passing 18th in August, 1914, and receiving a prize cadetship. He obtained his commission in the Oxford and Bucks L.I. (52nd) in December, 1914, and went out to the front the following spring.

He was wounded at Loos on September 25th, 1915, returned to the front in the spring of 1916, and later joined the R.F.C. He was flying in France from November to June, and was then awarded the M.C. He had brought down 10 Huns in barely six weeks.

CLAYE.—Lt. Charles Geoffrey Claye, Sherwood Foresters and R.A.F., aged 23, who was killed on July 5th was the only son of Mr. and Mrs. W. E. Claye, of Lenton House, near Nottingham. He was educated at Hinwick House, Wellingboro (Mr. Gruggen's) and Charterhouse (Hodgesonites), received his commission in the Sherwood Foresters in September, 1914, and went to the front in August, 1916. He transferred to the R.F.C. in March last year, and was wounded in the following May. Last January he was given a post as instructor in aerial navigation and bomb-dropping in England, but asked to transfer to the front again in April.

COWAN.—Capt. Philip Chalmers Cowan, Manchester R., attd. R.F.C., reported missing on Nov. 8th, 1917, and now officially presumed to have been killed on that date, was the second son of Mr. and Mrs. P. C. Cowan, of 33, Ailesbury Road, Dublin, and was aged 22. He was educated at Castle Park, Dalkey, and Marlborough College, and was in the Medical School of Trinity College, Dublin, when, in August, 1914, he got his commission through the O.T.C. He transferred to the R.F.C. in October, 1916.

GABELL and DELMAR-WILLIAMSON.—Capt. Douglas Ridley Clunes Gabell, Gloucestershire R. and R.A.F., and Lt. George Frederick Delmar-Williamson, Black Watch and R.A.F., who died as the result of a flying accident in Wiltshire, were both sons of Cheltenham residents—the first-named of the Rev. A. C. Gabell, of Battledown Gates, formerly rector of Swindon (Glos.), and the other the only son of Mr. F. Delmar-Williamson, of Lansdown Place, a well-known singer. Capt. Gabell was 20 years of age and his companion 19. Both of them were experienced flying officers, and had passed through Cheltenham College and Sandhurst.

GATECLIFF.—Sec. Lt. J. N. Gatecliff, R.A.F., who was killed on active service, was the only son of Mr. and Mrs. James Gatecliff, of Birchington, Kent, and only grandson of the late John Charles Stead, J.P., of Stoneycroft, Liscard, Cheshire, and was in his 21st year. He was educated at Magdalen College School, Brackley, and Woodford House School, Birchington. He joined the East Kent Yeomanry, serving as a trooper for 18 months, and then transferred to the R.F.C. He and his observer manned one of the 36 machines the crews of which made the supreme sacrifice during the week June 27th to July 3rd, when 179 German machines were accounted for.

McCUDDEN.—Major James Byford McCudden, V.C., D.S.O., M.C., M.M., was killed in an accident in France on the evening of July 9th. He had been promoted on the previous Saturday from Captain and Flight-Commander to Major and Squadron-Commander, and was on his way to take over his new command at the time of his death. He left an aerodrome near London on an S.E. biplane, built by the Royal Aircraft Establishment, and he had himself taken the closest interest in the building of the machine, which he described as one of the finest pieces of work he had ever seen. His long experience of aircraft work and his exceptional mechanical skill would therefore seem to remove any idea that his accident was caused by any visible defect in the machine.

He landed at an aerodrome in France, replenished his machine and went on. The only available account of his accident says that soon after leaving the aerodrome he appeared to be playing tricks near the ground, and was then seen to crash. He was dead when removed from the wreck. It has not been Major McCudden's habit to perform acrobatically near the ground for a considerable time past, for increasing responsibilities as an officer made him realise that his life was not entirely his own property, but was of value in the King's Service, and so it was very seldom that he did any fancy flying under 1,000 feet. One is, therefore, inclined to believe that something went wrong with the machine, and that what looked like trick flying was in truth caused by his efforts to regain control.



Major J. T. B. McCudden, V.C., D.S.O., M.C., M.M.

What went wrong may never be known. It may have been an undiscoverable flaw in the material. It may have been a concealed defect in workmanship. It may have been one of those silly accidents in which the best men are killed, such as a foot slipping over a rudder-bar and jamming, or a piece of luggage carried in the cockpit casting itself loose and wedging a control lever. Whatever it was it must have been a hopeless case, for no pilot has had more experience of getting down safely on wrecked aeroplanes than Major McCudden.

One only wonders whether, if he knew that his machine was out of control, he might have been saved by a parachute, for it will be of interest to many to know that as the result of all his fighting and flying experiences, Major McCudden was one of the strongest advocates of parachutes as a standard fitting for all aeroplanes, either on active service or at home.

However, James McCudden is gone, and in him the Royal Flying Corps—one uses the old name advisedly, for he was essentially a soldier—has lost not merely a very gallant fighting man, but an officer of exceptional mental ability who, if he had lived, would have been of the highest value as an aerial strategist and tactician. The sole consolation to the Corps is that if he had to die on active service it was better that he should be killed in an accident than that he should fall a victim to a German aviator. He died undefeated, after having placed 57 enemy aeroplanes to his credit.

James McCudden was a splendid specimen of the young Irishman of the kind which has done so much to make the British Empire what it is. His father, Mr. W. H. McCudden, a warrant officer, Royal Engineers, came from the County Carlow, and was of North of Ireland descent, barring that his mother was French. James McCudden, therefore, combined in himself all the finest qualities of a soldier, the hard pertinacity of the Northern Celt, the dash and cheeriness of the Southerner, and the disillusioned intellectuality of the French. One does not recall among one's varied acquaintance anyone whose character has developed more truly in accord with heredity.

At the early age of 13 James McCudden left off regular schooling and went into the Sappers as a bugler. At 18 or thereabouts he became a mechanic R.E., and in May, 1913, just before he was 19, he transferred to the Royal Flying Corps, because his elder brother, William McCudden, was already a Serjeant R.F.C., and because, young as he was, he saw that flying was going to be of great military importance.

When war broke out he was a 2nd class air mechanic in "C" Flight, No. 3 Squadron, at Netheravon, under Major Brooke-Popham. He went to France with the very first R.F.C. detach-



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ment, and throughout the retreat from Mons, the battles of the Marne and Aisne, and the operations in front of Ypres, he was in charge of the engine of that historic Parasol Blériot on which another Irishman, Lt. Conran—as he then was—did those extraordinary flights which contributed so largely to the welfare of the British Army. As such flights would have been impossible without a perfectly tuned engine it may be seen that even in those early days and in the humble rank of air mechanic, James McCudden was doing distinguished service to his King.

Early in 1915 he became an observer, and afterwards a pilot. As a serjeant-pilot he did excellent work on a single-seater pusher biplane, a de Havilland II., in that famous squadron commanded by Major Lanoe Hawker, V.C., D.S.O., one of the greatest of our fighting pilots and a splendid leader of men.

As a serjeant James McCudden won the Military Medal and the French Croix de Guerre. In due course he was given a commission, and thereafter his career was one string of successes. He won the Military Cross, and then a bar to it. Later he won the D.S.O., and a bar soon afterwards. And early this year he reached the highest honour of all, the Victoria Cross. Promotion came with his honours, and only three days before his death he became a major and was given command of a crack fighting squadron.

Though a very fine pilot he never set up to be a first class aerial acrobat, and he relied for his results on his skill in manœuvring for the right position of attack and on his shooting, which was astonishingly good. He habitually opened fire when most other fighting pilots would have thought themselves too far away from their target to hope for results, and when he fired he seldom missed.

Also he depended greatly on his skill as a mechanic, for he saw to everything himself, in his aeroplane, his engine, and his guns. The result was that his machine was always a little faster and had rather a better climb than others of the same kind, and his guns always shot a little straighter. He believed that genius in fighting, as in other things, is an infinite capacity for taking pains.

But above all he relied on his careful study of his enemy's psychology and physiology, though he did not call them by their scientific names. To hear him discuss the ways and habits of German aviators was like listening to a big-game hunter or an experienced old poacher talking about his quarry. He knew exactly what a Hun pilot would do under any given circumstances, and just how and when he would do it. He wasted very little time looking for Huns, he merely knew when and where to find them, and he waited till they came along.

Being all of a soldier, and an Irishman of the Irish at that, he killed without malice, and he killed all the more effectively because he did not lose his head with rage. Like so many great soldiers he disliked war, and he killed as many enemies as possible in order to stop it, in which business he was as dispassionate as is the Julius Cæsar elucidated by Mr. Bernard Shaw. He had no hatred for his enemies, in fact he had the greatest admiration for the German fighting pilots, and never hesitated to express it. Von Richthofen, Bölcke and Voss were to him heroes worthy to rank with our own best, a view in which one believes the great majority of the R.A.F. agree with him. His regret at von Richthofen's death was as great as if he had been a personal friend, for, as he said, he did so want to meet von Richthofen after the war and compare notes with him. Their opportunity of meeting has come sooner than they thought, and one hopes that those two gallant foes are now friends in that Valhalla to which brave men go.

Perhaps James McCudden had enemies. If so, one has never met any of them. Everyone who met him seemed to like him at once, and when one came to know him well one was filled with admiration for his strength of character and his level-headedness and foresight. He was frankly and boyishly pleased with his success, in which attitude of mind he greatly resembled the late Gustav Hamel. Neither of them suffered in the least from what is commonly called "swelled head." Both were simply and genuinely pleased that the risks which they took and the work which they did won the approval of those who were entitled to bestow approval.

For all his surface gaiety and jolliness, and his extreme youth, James McCudden was a deep and sound thinker, his thoughts being very much his own, thanks to lack of spoon-fed philosophy such as he would have received at school. One of his great objects in life was to let others have the benefit of his experience, and during the past few months, while he has been at home, he has spent hours upon hours in writing his experiences of his five years' service in the R.F.C. By a queer stroke of fate he finished the work only a few days before he left England on his last flight. His memories of those five years form a splendid history of the Corps, and one is glad to think that in years to come James McCudden will be, through them, a living person to thousands who have never seen him. For those of us who knew him well there is no need of any monument to keep his memory green, his vivid personality will always do that for us.

His parents have lost three sons and a son-in-law in this war. Serjt. William McCudden, the eldest son, one of the earliest N.C.O. pilots of the R.F.C., was killed in an accident to a Blériot while instructing at Gosport in 1915. Sec. Lt. Anthony McCudden, R.F.C., the third son, was killed during the fighting on the Somme a few months ago. Their son-in-law was killed in the blowing-up of the "Princess Irene." There remain to console them in their loss their daughter and a young son who is still under military age, but who bids fair to emulate the soldierly career of his brothers.

The services of the McCudden family to the King should be not only an example to the Irish race, but a lesson to those English people who malign the Irish because, owing to centuries of misgovernment, the Irish refuse to be patriotic for England's sake, and who, therefore, grudge their guerdon of praise to those gallant Irishmen who die in the King's Service.—

C. G. G.

ROSS.—Lt. George Augustus Bellair Ross, King's Liverpool R. and R.A.F., who was killed in action on June 1st, was the eldest son of Thomas George Ross, of Durban, Natal, and grandson of the late James Augustus Ross, formerly of Catherstone, Dorset. He was 27 years of age.

ENGAGEMENT.

ALDERSON—DOIG.—The engagement is announced between Lt. Augustus Grey Dixwell Alderson, R.F.C. and Worcester Regt., only son of the Rev. and Mrs. A. Dixwell Alderson, of The Vicarage, Tockwith, York, and Edith Mary (Mollie), eldest daughter of Mr. and Mrs. David Doig, of Rosslyn House, New Barnet, Herts.

MARRIAGES.

ADKINS—MAY.—On July 2nd, at St. George's Church, Hanover Square, W., by the Rev. Gordon Burdett-Dranfield, Lt. Walter Riley, R.F. and R.A.F., son of the late W. Adkins, was married to Margaret Ada Vrena, only daughter of Mr. and Mrs. J. Gladstone May, of Seawfell, Cowes, I.W.

BARR—WILSON.—On July 9th, at Milngavie and Baldernock U.F. Church, by the Rev. William Young, M.A., assisted by the Rev. W. B. Moyes, B.D., Strathblane, and the Rev. G. F. A. MacNaughton, M.A., Carsphairn. Capt. A. Douglas S. Barr, R.E. and R.A.F., eldest son of Emeritus Professor Archibald Barr, LL.D., and Mrs. Barr, of Westerton-of-Mugdock, was married to Maude Charlotte, younger daughter of Mr. and Mrs. H. Arnold Wilson, of Underfell and Craigmaddie, Milngavie.

BROCKLEHURST—MITFORD.—The marriage arranged between Capt. H. C. Brocklehurst, Hussars and R.A.F., brother of Sir Philip Brocklehurst, of Swythanley Park, Macclesfield, and Lady Helen Mitford, second daughter of the late Lt.-Col. the Earl of Airlie and the Dowager Countess of Airlie, took place quietly on July 11th in London. Only the near relatives were present at the ceremony.

BIRTHS.

BLOWEY.—On July 5th, at Ashdon House, Newnham, Cambridge, the wife of Major H. F. T. Blowey, R.F.A. and R.A.F., of a daughter.

HOLLAND.—On July 7th, at 67, Leigham Court Road, Streatham, to Phyllis (*née* Newcomb), wife of Lt. Victor Holland, M.C., R.A.F.—a daughter.

* * *

Mr. R. R. Rowe, Lt. R.A.F., late R.F.C., has been missing since May 3rd, and there is no news concerning the manner of his disappearance. Should anyone in communication with prisoners of war receive any information concerning Mr. Rowe, it will be thankfully received by his mother, Mrs. Rowe, at Woodhaven, St. George's Hills, Weybridge, Surrey.

AIR FORCE.

DEATHS.

BERTRAND.—Sec. Lt. Philip Bertrand, R.A.F., who was killed in action on June 16th, was born in 1899, the second son of Capt. Félix Bertrand, R.T.O., and Mrs. Bertrand, of 10, Warwick Street, Regent Street.

A correspondent of the "Times" writes:—"His loss will be deeply deplored by his many friends in British fencing circles. His death removes from the fencing room a youth of great personal charm, and *un vrai escrimeur* who, had he lived, would have maintained undimmed the name of Bertrand in the annals of the sword. Young Philip, or Angus, as he was familiarly called, began fencing at a tender age, under his father at Warwick Street. Subsequently, he went to Belgium as a pupil of Verbrugge, and later to Paris as a pupil of Rouleau, with whom he remained until the outbreak of war. He exhibited a rare gift; and his future as a fencer was one of great promise. At the International Tournament at Ostend, which was actually in progress when war was declared, he won *une médaille speciale*. He followed his elder brother into the R.A.F., and qualified as pilot in March last. He went to France in May, and his keenness in the Service and his charm of character soon won for him the goodwill of his brother officers."

FREDERICK and GRIMSHAW.—A double air fatality occurred in a north-east district of Scotland while Sec. Lt. L. M. Frederick, 26, and Sec. Lt. G. H. Grimshaw, 24, R.A.F., were flying. Their machines came into collision, and both aviators were killed.

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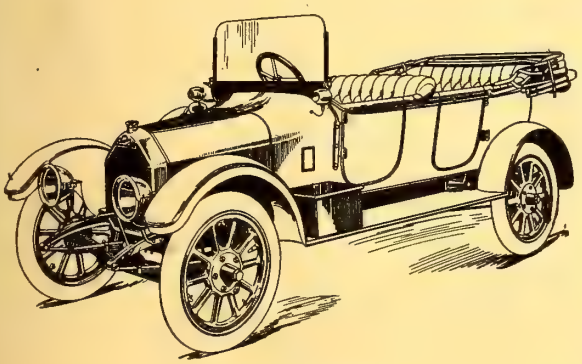
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HEYWOOD.—Lt. Alan Heywood, R.A.F., who died abroad on June 20th, from scarlet fever, was 23 years of age. He was the eldest son of Mrs. Heywood, of Whitkirk, Leeds, where he was born. He was educated at the Drax Grammar School, and was married only 10 months ago to Miss Lightfoot. His widow resides at Halton.

OAKLEY.—Lt. Maurice Ford Oakley, R.A.F., who was killed in an aeroplane accident on July 3rd while on active service, was the son of Mr. Harry E. Oakley, O.B.E., M.Inst.C.E., of 10, Russell Road, Kensington. He was 19 years of age.

SALES.—Lt. N. Sales, R.A.F., who was killed in action on June 30th, was the son of Maj. W. Sales, R.F.A., of Sheffield. He was 23 years of age.

SCARAMANGA.—Lt. James John Scaramanga, R.A.F., who died of wounds on July 10th, was in his 20th year. He was the younger son of Mr. and Mrs. John Scaramanga, of 259, St. James's Court, Buckingham Gate. He had his commission as a flying officer in November, 1916.

ENGAGEMENTS.

ADAMS—ADAMS.—An engagement is announced between Maj. Adams, R.A.F., son of W. J. Adams, of Sydney, and Miss Winifred B. Adams, daughter of the late J. H. Adams, of Congleton, Cheshire.

DURSTON—VEREKER.—The marriage arranged between Miss Vera Vereker and Major A. Durston, R.A.F., will take place on August 1st at Holy Trinity Church, Bembridge, Isle of Wight, at a quarter to two o'clock. All friends will be very welcome at the church.

MARRIAGES.

DAVIS—NEWCOMB.—On July 8th, 1918, at St. Gabriel's, Bounds Green, by the Rev. A. L. Gardiner, Albert Terrey Davis, Sec. Lt., R.A.F., of Kensington, to Hilda Fletcher Newcomb, daughter of the late Mr. H. W. Newcomb, and of Mrs. Newcomb, of Bowes Park.

DAVY—STEEL.—On July 11th, at St. Mark's Church, Sheffield, by the Rev. A. B. Burney, M.A., Vicar, Lt. Percival Harold Davy, R.A.F., younger son of the late S. H. M. Davy, of Paignton, Devon, and of Mrs. Austin Batty, Sharrow Head House, Sheffield, was married to Muriel, younger daughter of the late Sydney Steel and of Mrs. Steel, of Bournemouth.

HOLLWAY—THORPE.—On July 8th, by special licence, at St. Marylebone Parish Church, by the Rev. J. Roberts, Richard Geoffrey, Sec. Lt. R.A.F., only son of Geoffrey and Alice Hollway, of The Hollies, Sunbury-on-Thames, was married to Freda, only child of Follett Thorpe, barrister-at-law.

LANGFORD-SAINSBURY—MORTIMER.—On July 10th, at St. Mary Abbot's, Kensington, Thomas Audley Langford-Sainsbury, R.A.F., was married to Maud Hamilton, only daughter of the late W. Russell Mortimer and Mrs. Russell Mortimer, of 57, Brunswick Place, Hove, by the Rev. T. H. Langford-Sainsbury, Rector of Beckington, Bath, father of the bridegroom.

NEALE—WILD.—On July 9th, at St. Stephen's Church, Hampstead, N.W., Capt. Geoffrey P. Neale, R.A.F. of Brentwood, was married to Stella B. Wild, of King's Road, Westcliff-on-Sea.

REYNOLDS—HUXTABLE.—On July 8th, at Henbury, Bristol, Lt. Cecil James Reynolds, R.A.F., only son of Mr. and Mrs. J. S. Reynolds, of Coombe Dingle, Bristol, was married to Marjorie Edith, eldest daughter of Mr. and Mrs. Ivor Huxtable, of Wimbledon, London.

BIRTHS.

DUGUID.—On July 9th, at Baroda, Rickmansworth, to Myfanwy (née Thomas), wife of Capt. Alan Duguid, R.A.F.—a daughter.

LITHGOW.—On July 13th, 1918, at The Close, Tetbury, the wife of Major E. G. R. Lithgow, R.A.F.—a daughter.

NEWMAN.—On July 5th, at 1, Cromwell Road, S.W.7, the wife of Capt. W. P. M. Newman, R.A.F., of a son—still-born.

FOREIGN COMMUNIQUES.

FRANCE.

July 10th.—During July 8th seven German aeroplanes were brought down and two captive balloons set on fire by our pilots.

Army of the Orient.—The Allied aviators fought several actions in the air, during which two enemy machines were brought down.

July 10th.—Army of the Orient.—The British air service successfully bombarded numerous enemy depots in the Struma Valley.

July 11th.—During the month of June our Air Service brought down 150 enemy machines and seriously damaged 181. In addition, 31 captive balloons were brought down in flames.

Our bombarding Air Service dropped more than 600 tons of bombs.

July 13th.—Army of the Orient.—British aviators have carried out numerous bombardments behind the enemy's lines.

GERMANY.

July 8th.—Two squadrons of seaplanes of the Marine Corps under the command of First Lt. of the Reserve Christiansen and Lt. of the Reserve Becht severely damaged the British U-boats C 35 (?) and E 51 by bomb hits and machine-gun fire on the afternoon of July 6th off the mouth of the Thames. Enemy destroyers endeavoured to tow in both submarines. C 25 (?) was last observed in a sinking condition.

July 9th.—Eighteen enemy aeroplanes were shot down yesterday. Lt. Billik obtained his 23rd and 24th aerial victories, and Lt. Friedrich his 21st.

July 11th.—Five American aeroplanes out of a squadron of six which intended to make a raid on Coblenz fell into our hands. The crews were taken prisoner.

July 12th.—Lt. Neckel has obtained his 20th aerial victory.

The sixth aeroplane of the American squadron which was flying to Coblenz, as reported yesterday, has fallen into our hands after being shot down.

July 13th.—During the month of June 468 hostile aeroplanes and 62 captive balloons were shot down on the German front. Ninety-two of these aeroplanes were brought down by our anti-aircraft guns. Of the 468 aeroplanes 217 are in our possession; the rest were observed to fall beyond the enemy's positions.

We have lost 153 aeroplanes and 51 captive balloons in battle.

July 14th.—The weather clearing up, our bombing squadrons made night attacks against the enemy railway works on the French coast between Dunkirk-Boulogne-Abbeville, and in the region of Lillers-St. Pol-Doullens, as well as in the region of Crepy-en-Valois and Villers-Cotterets.

July 15th.—Lt. Loewenhardt obtained his 35th aerial victory.

ITALY.

July 12th.—A hostile aeroplane was brought down over Feltre (Upper Piave).

July 13th.—Though the atmospheric conditions were not satisfactory aerial activity was yesterday very intense. Ten enemy machines were brought down. Lt.-Aviator Silvio Scaroni has reached his 30th victory in the air.

July 14th.—Three enemy aeroplanes were brought down during air fighting.

July 15th.—On the Asiago Plateau infantry in movement in the back areas were attacked with machine-gun fire by our and Allied aviators.

Six enemy machines were brought down.

U. S. A.

July 11th.—As the result of a bombing expedition last evening five of our machines are missing.

July 12th.—Yesterday our aviators shot down a hostile machine in the region of Thiacourt (north-west of Pont-à-Mousson).

TURKEY.

July 7th.—This morning five enemy aeroplanes attacked Constantinople with bombs. Thanks to our defensive measures not even material damage was done.

BELGIUM.

July 15th.—Sub-Lt. Coppens set fire to a German balloon—his 14th success.

THE WAR IN REVIEW.

Italy and the United States.

Some jubilation is displayed by the Press at the appointment of the journalist M.P. for Turin to the post of Director of the Aeronautical Commission to the United States. It is expected that we shall no longer have anything for which to wait. The Hon. Signor Bevione is a live man.

Now, too, that the Ansaldo firm has taken over the Pomilio business as well as the Siti concern of the same city, we look like getting a powerful aero-centre at Turin. The city is so pre-eminently suited to be the hub of the aviation world that the turn of affairs could be safely prophesied years ago. Remote from the battlefields and brimful of mechanically-minded workers, nothing but serious geographical and climatic conditions could have stopped the thing coming about.

The Ansaldo people now advertise themselves as of Turin, Bolzaneto, and Spezia, as well as of Borzoli.—T. S. H.

Italian Air Work.

Mr. Ward Price, writing of Italian military operations on June 24th from Italian Headquarters, says :—

Since 5 o'clock this morning the Italian aeroplanes have hardly come down except for petrol and more munitions, and the weather has been perfect for the work. A useful feat was the blowing up of an Austrian munitions train in Conegliano Station. In photographs of this explosion which I have seen the immense mass of white smoke looks like a cloud close beneath the machine.

Mr. Price continues :—

The body of Maj. Baracca, Italy's crack airman, who fell on the Montello, has been found by an Italian war correspondent, and brought back for burial. It is only slightly burnt, although his machine was quite destroyed by fire. As I heard Maj. d'Annunzio say of his famous brother airman to-night :—" It was the finest death an airman could have. No enemy flier can claim to have brought Baracca down. He died the uncorquered champion of the air." Another account states that Maj. Baracca committed suicide to avoid capture. It seems much more likely he could not bear the torture of being burned alive.

[One fails to see why being grilled to death should be an enviable death.—Ed.]

Fine Work in Italy.

A message from Italy dated July 9th, says : From June 15th to 25th British and Italian aeroplanes brought down during reconnoitring operations 107 enemy machines, seven balloons, and dropped 5,000 bombs. They also took 3,000 photographs, going as far as Laibach, Agram, Karlstadt, and Fiume. Over 200 bombing aeroplanes dropped an enormous weight of projectiles. Italian airships during the same period located 390 artillery positions. Only nine aeroplanes and three balloons were lost.

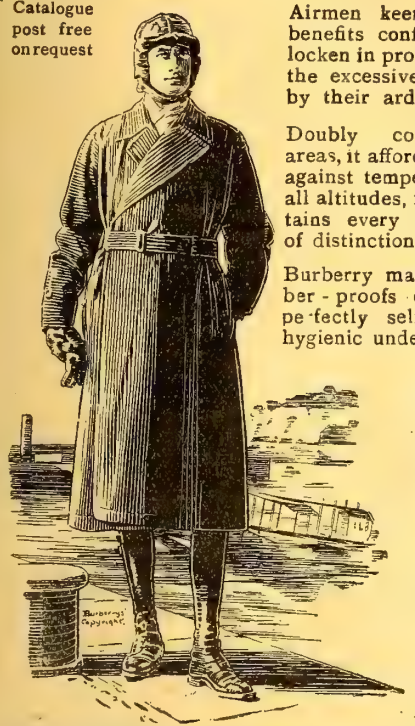
Italian Parachute Work.

In an account of the doings of the aero sections in the " Home to our Mountains " push on the Piave, a pressman, who deals with aviation sensibly as a rule, tells of a smart parachute descent from a tethered gasbag which had had the misfortune to be cut

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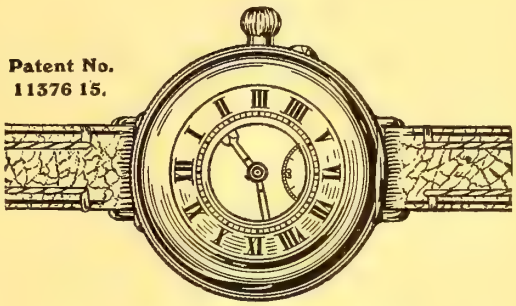
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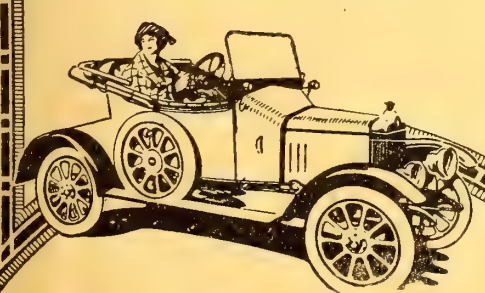
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off from its fatherland by a shrapnel splinter. He relates that already so early in the battle five observation officers owed their lives to the parachute, one only being hurt in landing, and this not seriously, as wounds count nowadays.—T.S.H.

Italians in America.

Now that the Commission under Captain Cappi which went to the States last August to introduce Italian aero-wares to that great public has returned—alas, without Capt. Piesnati—one hears more of the doings of that quartette of famous men.

Apart from the fine flights made by the late Capt. Resnati, by Baldioli and by Lt. Ballerini, this latter put up some excellent climbing records, officially observed by both the military and civilian authorities.

According to the pilot he reached 6,000 metres with a passenger in 28 minutes at Langley Field on November 15th, 1917, and 6,350 metres sans passenger in 19 minutes on the 20th of the same month, both American records. Is the aerodrome in question on, above, or below sea level?—T.S.H.

The Austrian Push.

A Reuter message from Rome dated July 8th, says:—

During the ten days of the Austrian offensive British and Italian aviators brought down 107 enemy planes and seven balloons, while 3,000 photographs were taken, 5,000 bombs dropped, and many hundred thousand rounds fired from machine guns.

Our losses were seven machines brought down in the enemy lines and two others put out of action, while three balloons were brought down. The losses in personnel were sixteen pilots and five observers killed or missing.

The Submarine Incident.

A semi-official message from Berlin dated July 9th gives the following details of the attack by a German air squadron on some British submarines.

On Saturday afternoon the air squadron left the Flemish coast on a reconnoitring expedition. In the Thames estuary the airmen observed submarine C 25 and attacked it.

The crew on deck were killed by machine-gun fire, and finally only the commander remained alive. He kept on firing at the airmen with a rifle until he, too, was killed, at the end of a fight which lasted thirty-five minutes.

After firing away all their ammunition the air squadron returned. A second squadron arrived while the C 51 was towing the C 25, and attacked both submarines. Bombs were dropped, and the C 25 was hit twice. The airmen expended all their ammunition and then went back.

In the meantime, the first squadron had returned, and they observed the sinking of the C 25 and the towing of the C 51 to port.

The Point of View.

How the growing power of the Allies in the air is feared by the Germans is disclosed in the report of a speech delivered in the Reichstag on July 3rd by Herr Scheidemann, leader of the Majority Socialists, as reported in the "Cologne Gazette":—

> There is nothing more horrible than air attacks on open towns outside the war zone. The enemy airmen, however, have not succeeded in destroying the munition camps or in damaging the railway junctions in our country.
>
> Whether our airmen have succeeded in causing considerable military damage I do not know; but I do know that, by means of air attack, many hundreds of innocent women, girls, and children have been killed and mutilated. The reporting of air attacks is mostly forbidden in this country. You therefore do not learn of the women and children who are constantly being killed in Southern Germany.

Herr Schiedemann then proceeded to allude to the air attack on Mannheim, on June 29th, "where," he added, "it was only by chance that bombs did not fall in the market place and cause hundreds of victims."

Another Internment.

A large German seaplane was wrecked on July 4th near the northern coast of Laaland Island, Denmark. The crew of three, who were rescued by Danish seamen, will probably be interned.

A Spanish Air Post.

An important company has been founded in Madrid for establishing an air post all over Spain.

The first line to be started will be from Madrid to Barcelona and the Balearic Islands. The flight from Madrid to Barcelona will occupy four hours. Before long passengers will be permitted.

An American Ace.

According to the Paris Press, the American aviator Putnam has now to his credit 10 victories, seven of which were scored in June, thus equalling the monthly records of Lts. Guynemer and d'Orme.

A Story of the Marines.

A Wireless Press message of July 11th says that it is expected that an aviation corps of deaf mutes will shortly be formed. Army experts, after flying tests, have found that deaf mutes lack all sense of motion.

[How would a deaf mute be able to say "Contact," and how would he hear his orders? One has heard of an aviator being blind, before, during, or after flying, but that, as Mr. Kipling says, is another story.—Ed.]

Against Odds.

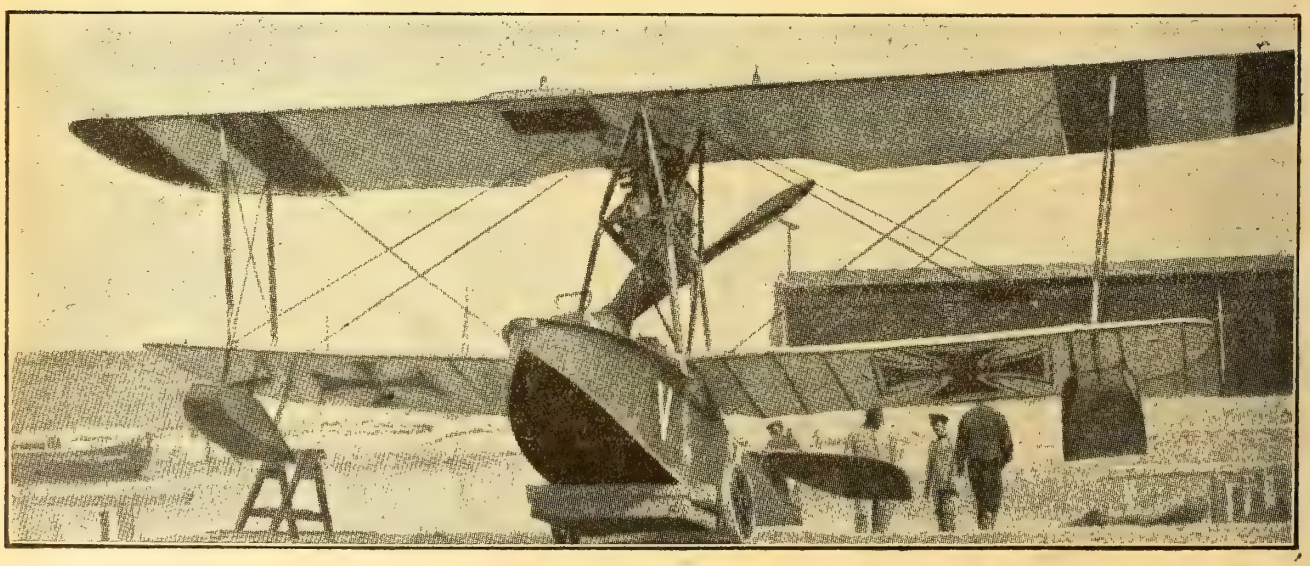
A "Times" corespondent, writing on July 10th, states that Lt. Quentin Roosevelt, youngest son of the ex-President, became detached from his flight while in the region of Château-Thierry to-day. For some moments he was entirely lost, but at last, seeing three aeroplanes in flight, he joined them from behind, only to discover from the rudder marks of the machine he was following that he had attached himself to the enemy. Nothing daunted, he gave battle, and after firing 50 rounds into the tail of the rear machine saw it spin towards the ground. He returned safely to his aerodrome, having brought down, though yet without official confirmation, his first German.

Another American Ace.

The American Air Force has brought forth another "ace," Lt. Meissner, of Brooklyn, is now officially credited with having destroyed five German machines.

The Death of a French Pilot.

It was reported from Paris on July 14th that Lieut. Beaumont, a well-known bombing aviator, was killed as the result of a collision with another aeroplane.—[Several papers reported him as "Lieut. Jean Beaumont," winner of the "Daily Mail" Prize. The said winner was, in fact, Lieut. Jean de Conneau, who flew under the name of "André Beaumont," and has been commercially concerned with aeronautics since some time before the war.—Ed.]



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THE VALUE OF SCALE MODELS.

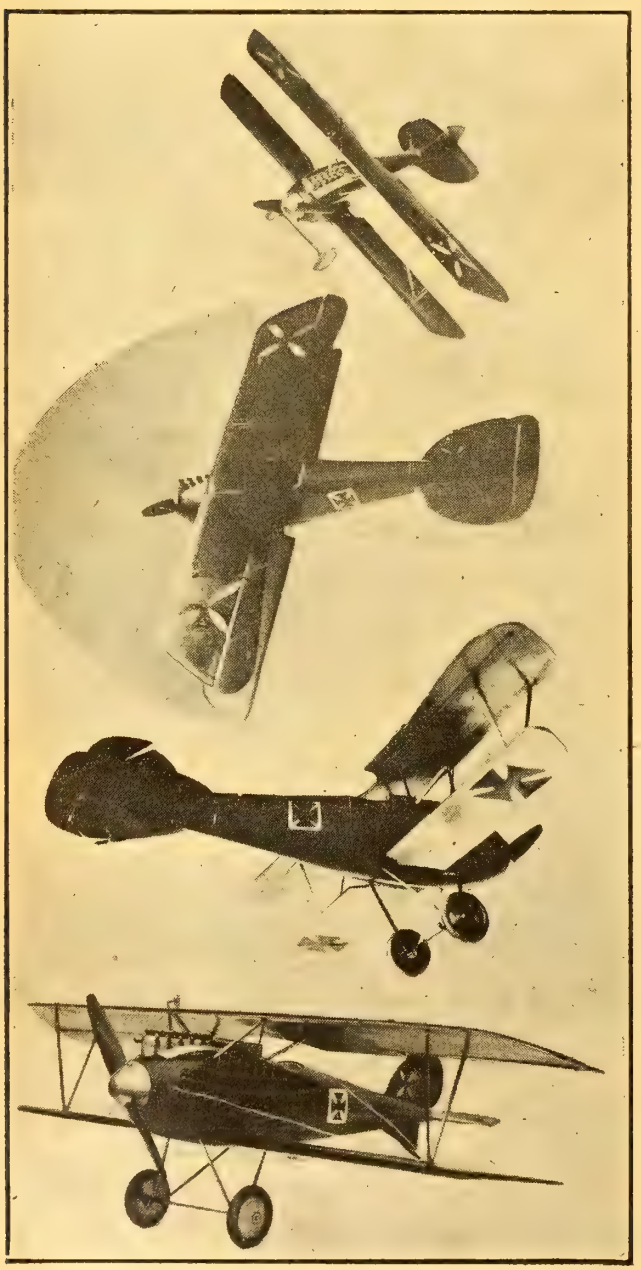
Although the value of scale models suspended in wind tunnels is of the order of "X" when "X" represents a very unknown quantity, it occurs to one that scale models, correct in colour as well as in outline, should be of considerable value in the training of young pilots.

To the uninitiated, one aeroplane looks very like another. To the novice their similarity is confusingly evident. The ability to differentiate instinctively between the different types is only acquired with practice.

It is important that every military aviator should be able at a glance to distinguish a friendly or an enemy aeroplane without being compelled to look for identity discs which he may not be able to see if the other machine is against the sunlight. It is necessary also for him to be able to recognise to what type and class an enemy machine belongs, both for offensive and defensive tactics, so that he can estimate the relative superiority or inferiority of his opponent and can calculate his probable "blind" areas.

It is not easy to teach the young pilot all this, except by practical experience, which is expensive. Photographs intelligently taken are of considerable assistance, but they do not tell the whole story, nor is it possible to take each machine in an infinite number of positions.

Photographs of a scale model of an Albatros single-seater fighter, Type D III, which was made in a squadron workshop under the supervision of a flying officer from oddments suggest a method of affording instruction of the kind required.



The Model Albatros D III. Chaser described in the article.

After an adequate amount of coaching, the pupils could be tested for their powers of deduction by being required to identify a certain number of models within a limited space of time.

Hereafter is given a description of the model illustrated. Even more realistic effects would be obtained with the use of materials selected specially for the construction of the official models.

THE ALBATROS CHASER, D3, SCALE 2 IN. TO A METRE.

The fuselage is made of walnut from a broken aeroplane propeller. It is made of seven pieces glued together. The tail-plane and upper and lower fin are also of walnut, and are tongued, grooved, and glued in place. The rudder and the elevator are hinged to the fin and empennage, and are also of walnut.

The main planes are of walnut with sheet aluminium under-surfaces. The pilot's seat is of sheet aluminium. The under-carriage, inter-plane, and centre-section struts are rafwires filed down to the correct size and streamline. The cross-bracing wires are strands of steel cable. The axle is a rafwire streamlined in the centre portion and reduced to a spindle at the ends. The wheels are turned out of solid gun-metal. The tyres are rubber rings. The wheels are threaded over the axle, which is burred over at the ends. The axle has four brass washers, and is attached to the under-carriage by strands of rubber. The tail skid is of walnut hinged to the lower fin and sprung by rubber strands.

The ailerons are of the same construction as the top plane and are hinged and interconnected by a cotton balance cable passing over small brass pulleys and attached to king-posts of aluminium. The spinner and propeller spindle is turned out of a solid piece of gun-metal bearing in the nose of the fuselage, and is secured by a split-pin. The propeller blades are made of six laminations of walnut and mahogany and driven into sockets in the spinner.

The cylinders are turned from solid brass rod. The exhaust-pipe, overhead camshaft, and radiator pipe are brass and copper wires. The valve mechanism is represented by screwed brass plugs and brass strips soldered to the camshaft and screwed into the cylinders. The cowling round the engine is cut out of a bar of aluminium, and the machine-guns are made of bar aluminium, brass wire, and aluminium tube. The iron crosses are of black enamel and inlaid aluminium.

The dimensions are as follows: Span, 18½ in., overall length, 14½ in., overall height, 6½ in.

ON COMBING OUT.

I.

Day after day one reads in the papers that this and that Government Department is in the process of being "combed out." In fact, by the startling and dramatic headlines used by most of the "rags" one is almost led to believe that the Government is doing something really clever.

It is quite obvious that the daily papers are told (by the politicians who control them) to make a noise regarding these comb-outs, in order that the public may be duped into believing that our Ministers are really doing their best to win the war and earn the large incomes paid to them by the nation.

Let us for a moment give the Government the benefit of the doubt, and assume that they are using a correct system of handling this job for once.

In glaring capital letters one sees that Grades 1, 2, and 3 men "must go." Excellent!

One also reads in the same sort of headlines that men of between 40 and 50 must join the Army. Very patriotic!!

Now, having thought on the methods about to be used regarding this last drastic comb-out one regrets that the Government has failed to use the slightest common sense. What little common sense these members have got, they seem to keep for their own personal edification.

PROTECTION.

One would like to know the reason why these men from Government Departments, now coming to the Army, did not join the colours long ago. As they did not have the spirit to join up voluntarily, they should have been conscripted when that excellent method had been adopted; almost too late. These men are young, and are certainly not experienced business men.

Perhaps the explanation is that the Government saw fit to let these shirkers come and shelter from "those horrid trenches" under their umbrella of protection.

Thank goodness umbrellas have a way of leaking in time.

BRAIN: CORRECT USE OF.

On the other hand, one now sees the men of between 40 and 50 being ordered to go and learn the approved manner of getting killed.

A very large percentage of these "veterans" are trained business men, and if they are not trained business men they are trained for some other calling.

It is pretty obvious that most men who have lived nearly half a century must be conversant with some trade or profession.

It is also a proven fact (except to our Government) that this

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type are of more value to the country, doing work that they understand and have done for the last 20 or 30 years, than learning to form fours and the thousand and one details they would be taught in the Army.

It is a crying shame that the Government did not commandeer these men's brains for office work, etc., long ago, instead of taking in a mob of untrained, inexperienced boys, the majority of whom, to put it plainly, were too cowardly to face the Hun.

How terribly degrading it is to know that this "thing" is a Britisher!!

Britishers, they may be, but one cannot accept them as members of the British nation.

One still hopes that before it is too late the Government will use the brain of these elderly men for what it has been trained, instead of throwing them into the Army, where, with every sincere respect to their patriotism, they would be utterly useless for the heavy physical work which their over-matured limbs would have to endure.

BRAIN: THE WASTE OF.

It is quite possible that these elderly men could be put to do orderly room work. But it would be some months before they would learn to separate the red tape from the real work on hand, and so get to the bed-rock business of the day.

Meanwhile, the men who are doing the orderly room work are all of low category and unfit for active service. They are also very conversant with Army routine and orderly room methods, so it would be absurd to turn out the initiated to make place for the uninitiated.

One is told that it is of no use crying over spilt milk. Agreed!

But, when a party of men deliberately get together and throw away gallons of cream, steps should be taken to place these members of society in separate padded cells. For, mark you, it is the men between 40 and 50 who keep the nation's business going and pay the taxes, and, from the national point of view, they are the cream of the nation.

However, one may always be cheered by the knowledge that we shall not lose the war until the income-tax reaches the amount of a sovereign in the pound.

A French saying has it: "Ce n'est qui le premier pas qui coûte."

One begs to differ. It is the last step that really counts. One is ready enough to make a beginning. J. S.

AN R.A.F. REGATTA.

The R.A.F. held a regatta at Hammersmith on July 13th. In the single sculls, the contest for which was from Thornycroft's to the Kensington Rowing Club, Air Mech. Gibson won easily from Air Mech. Taylor. Flt. Serjt. Dempsey and Air Mech. Allewell beat Air Mech. Taylor and Air Mech. Bickell and Serjt. Jones and Air Mech. Gibson in the final of the pair-oared race, the course for which was from Chiswick Eyot to the Kensington Rowing Club. The four-oared race resulted in a win for Air Mech. Moore, Air Mech. Taylor, Corpl. Donkin, Serjt. Jones (stroke), and Air Mech. Hoyle (cox.), who defeated Air Mech. Lale, Air Mech. Allewell, Air Mech. Gibson, Air Mech. Marshall (stroke), and Corpl. Watts (cox) in the final.

LOST GERMAN STARS.

Reuter's correspondent, writing at the British Front, on July 3rd, says:—

The admissions of the German Air Service as to the losses it has recently sustained prove the severity of the competition it has had to face and the insecurity of even the most accomplished aviator. Of the pilots who were credited with 20 or more victories, as many as 14, with a total of 363 successful combats to their credit, are known to have been killed or captured. These

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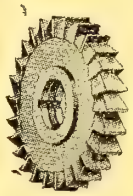
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include such men as Capt. von Richthofen, with 80 victories claimed; Lieut. Max Muller, with 38; Lieut. von Bulow, with 28; Capt. von Tutscheck, with 27; Lieut. Wusthoff, with 27; Lieut. Loetzer, with 24; and many other distinguished pilots.

The German bombing organisations have also sustained heavy losses, among others Capt. Kleine, commander of the so-called "England Squadron," Capt. Weese, and Capt. Koohl have been killed or captured.

THE MARTYRDOM OF PARIS.

The Paris "Temps" of July 9th, sums up the results of the bombardment by aircraft and long-range guns carried out by the Germans on Paris and suburbs. It was on January 30th this year that aerial bombardments were begun in earnest, and on March 23rd when the long-range guns began.

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The casualties furnished by official communiqués total for the period from January 1st to June 30th, 141 killed and 432 injured. These figures do not include victims who subsequently died from their injuries, nor 66 persons who were suffocated on March 11th in a crowd as the result of panic at the entrance to a Metropolitan refuge.

[When one compares this with the immunity of London, one begins to realise the benefits of an adequate Air Force and Anti-Aircraft Defence Service.—Ed]

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The menu was too varied to give in detail, each member having assiduously saved coupons for weeks previously.

The distribution of the prizes was carried out amid much mirth. The speeches apparently did not leave the gathering speechless, as the homeward journey was enlivened by a choral concert.

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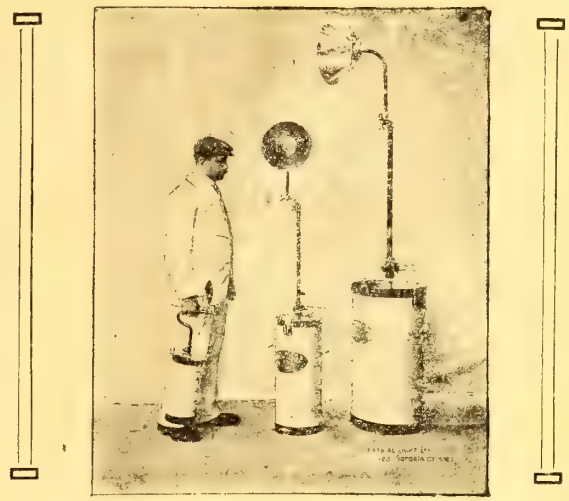


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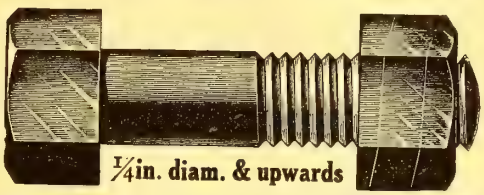
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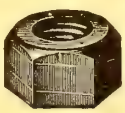
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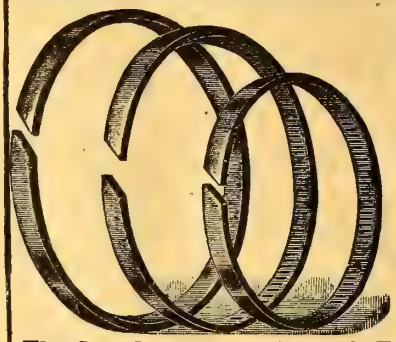
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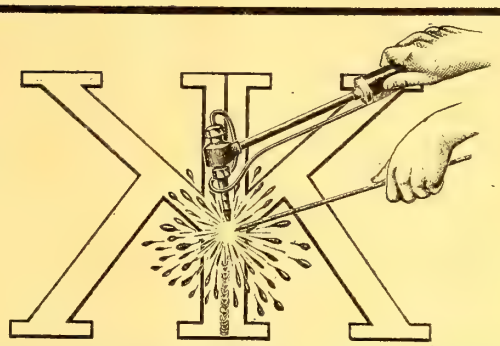
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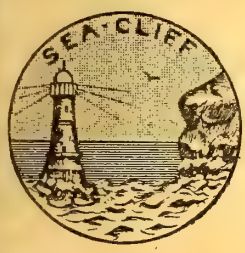
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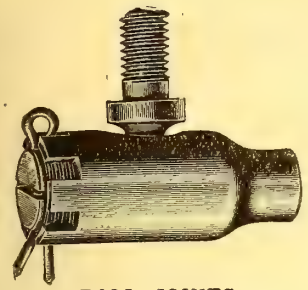
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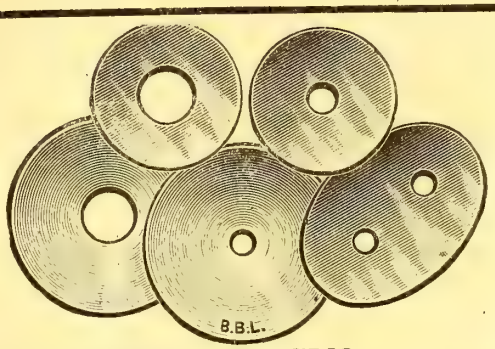
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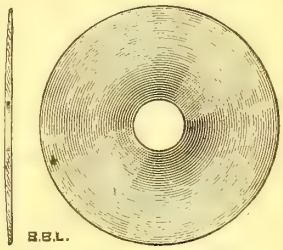
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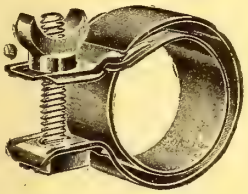
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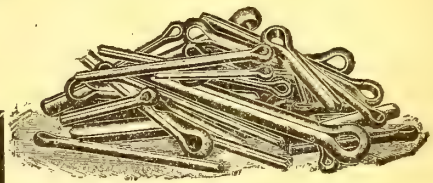
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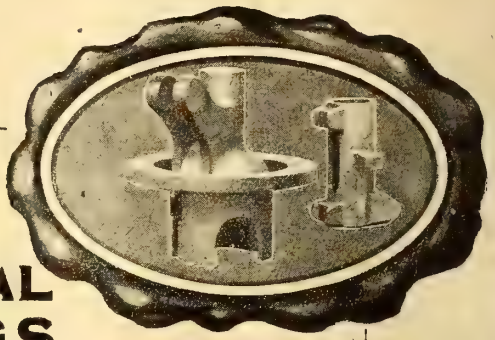
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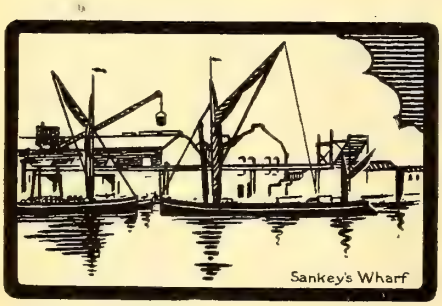
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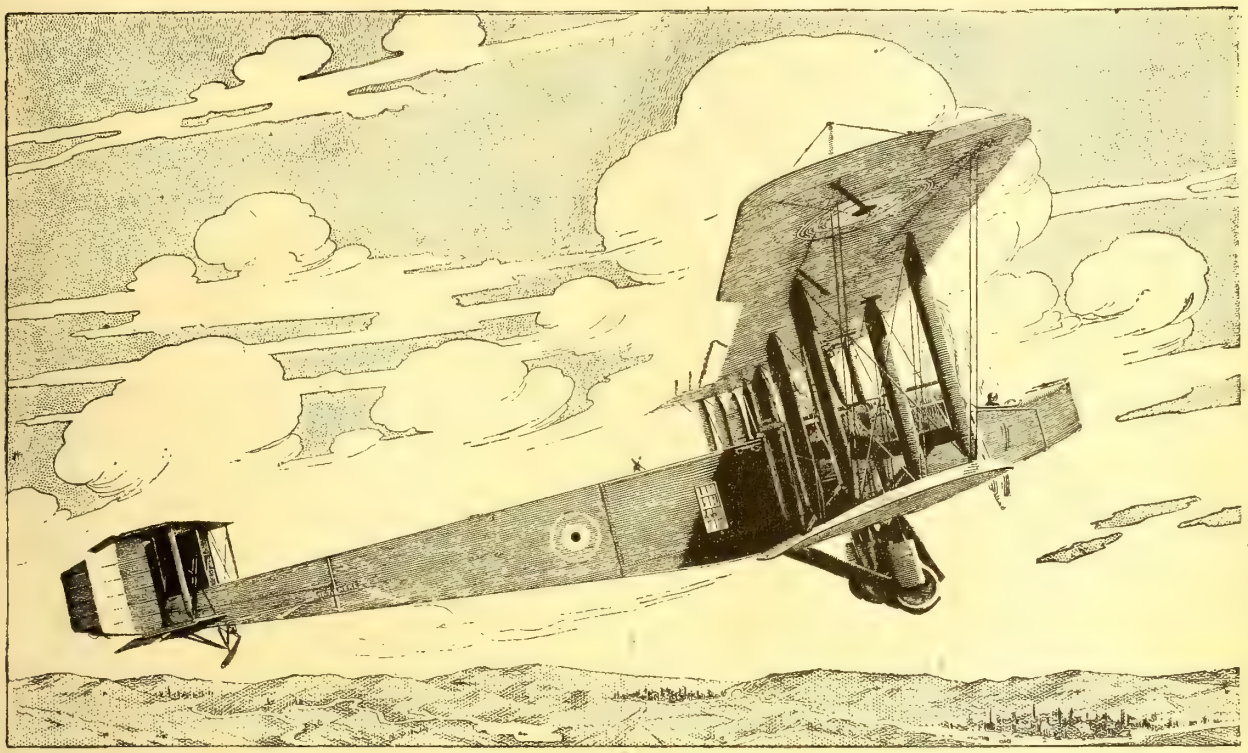
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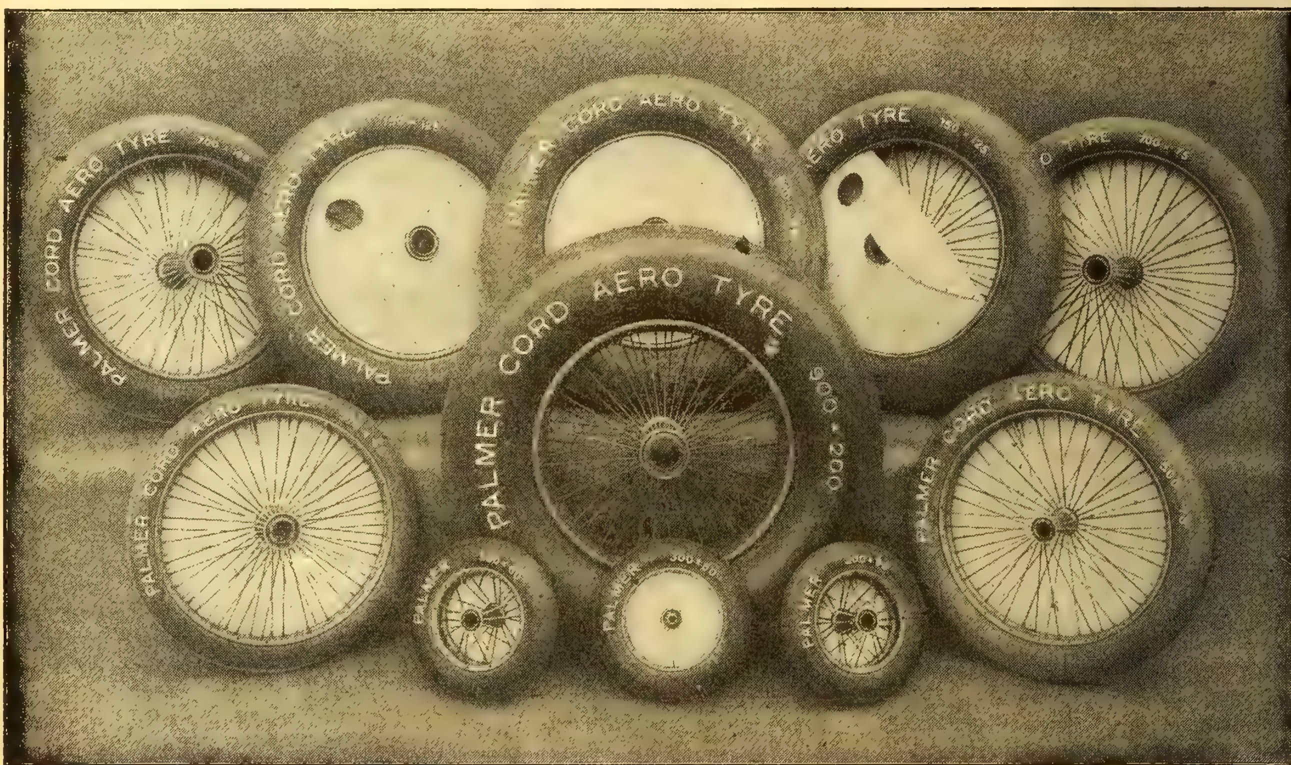
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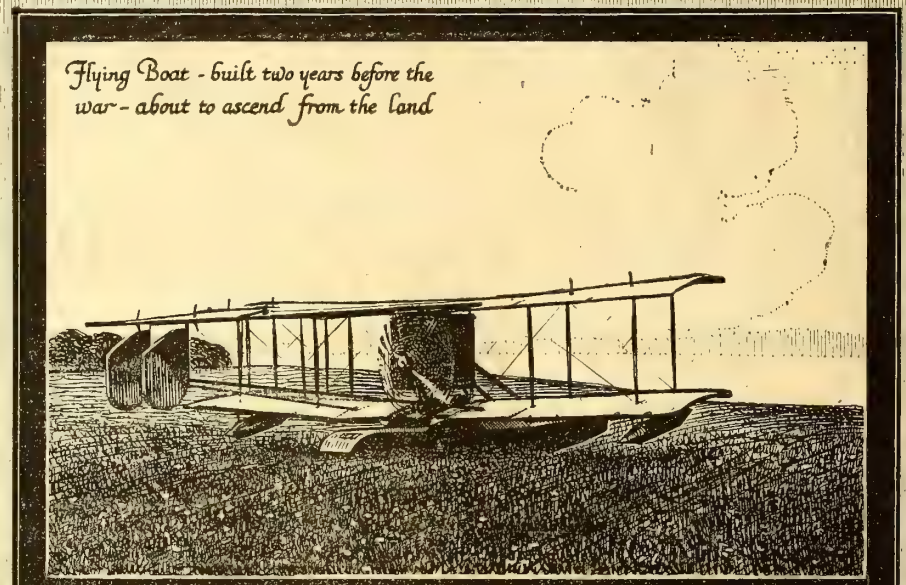
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ON LAND POWER AND AIR POWER.

On various occasions it has been stated in this paper that the time will certainly come when fleet-actions between tanks—as armoured caterpillars are familiarly called—will be as common as, or commoner than, fleet-actions at sea. The doctrine of the land-battleship was laid down immediately after the first appearance of the tanks in the Battle of the Somme in the Autumn of 1916. At various times prior to that date it was stated in this paper that means existed by which trench-warfare could be broken up, and open warfare could be forced on the enemy, though naturally one could not state what the means were until the tanks came into action.

The recent gallant attack by French and American troops between Soissons and Château-Thierry is said to have been assisted by a large number of French tanks, and it has been stated that these vehicles had a most dire effect on the German troops opposed to them. In various other attacks by the Allies during the present year tanks were used with marked success, and the importance of the tank as a weapon is emphasised by the fact that the Germans are also using them to a considerable extent.

The German tanks appear to be inferior to both the French and British breeds, which seems peculiar when one recalls the excellence of German motor-cars and aero-engines. But one also recalls the fact that French and British cars were superior to German cars until the painstaking German, profiting by our mistakes, produced the Mercédès cars which beat the world's best in the Gordon-Bennett Race of 1903, and in the Grand Prix of 1914. The French tendency in things mechanical is to be frightfully enthusiastic till it is seen how a thing works, and then to lose interest. The British tendency is to assume that because a thing is British it is therefore perfect and needs no improvement—which feeling persists until a rude awakening arrives. The German tendency is to plug along laboriously till a thing is perfected. The German genius is the infinite capacity for taking pains.

Warning by Example.

It is against this German genius that this country and its Allies need to be warned once more. If we are self-satisfied in our tanks as they are we shall find the Germans beating us in tank-work in next year's campaigns. It is necessary to remember that the tanks which went into action in the Autumn of 1916 were in all essentials the same thing which was submitted and turned down in the later days of 1914. They could and should have been in action in the Spring of 1915. They were 18 months behind their time when they did come into action. We have still to pick up that lost 18 months in tank design and production.

The whole history of tanks is disgracefully like the history of aircraft. Official stupidity and official intrigue held back developments which were easily possible to the independent specialists, engineers and designers, who knew their jobs. To-day, thanks to the innate ability of our aircraft designers and to the support given to them by the present Secretary of State for the Air Force—whom, one hears, is now to be known as Lord Weir of Eastwood—the Aircraft Industry has won through and our aviators hold a position in the air which is very little, if at all, inferior to that held by our mariners on the sea. If there had been another William Weir in charge of land-battleships, caterpillars, tanks—call them what you will—our Land Power would have been in nowise inferior to our Air Power and our Sea Power.

Land, Sea, and Air Power.

And let it here be stated that just as Sea Power and Air Power are interconnected, so are Land Power and Air Power interconnected. If we had those vast fleets of land-ships, which we should have had but for criminal blundering, our land fleets would need air scouts just as do our ships at sea. Our aircraft would then fulfil on land precisely the functions which they fulfil to-day—and those many other functions which they will fulfil some day—at sea. Trenches would cease to exist, and all functions of aircraft directly concerned with trench warfare would cease with them.

We should have open warfare between highly mobile forces of tanks, directed and assisted by aeroplanes, and supported by cavalry and mounted infantry. Foot-slogging infantry would exist simply as containing forces, or as armed police in occupied enemy territory. And the success of those mobile land forces would depend entirely on the efficiency of their air forces.

Early Alliance.

Appositely enough, the first success of a tank attack was signalised by an air scout who landed at his aerodrome and reported that "two tanks were walking up the main street of Flers, with the British Army cheering behind them." Since then we have had accounts of aeroplanes attacking tanks and of tanks fighting aeroplanes with their machine-guns. We have also had officially approved accounts of squadron actions between tanks. For example, the "Times" correspondent, writing from the British Front on April 25th, said of the fighting in the Villers-Bretonneaux area :—

> Four or five enemy tanks fell in with two of ours, and the first engagement between land ironclads took place. One of our machines was crippled, when a third British tank hove in sight and joined in the attack. The newcomer knocked out one of the enemy, and the rest appear to have made their escape. On another part of the battlefield British light tanks were engaged, and did fine work, some of them coming back with sides splashed with blood, for, besides using their guns, these tanks were able to ram the enemy, and managed in several cases to get home into bunches of Germans. They were evidently handled with great skill and gallantry, and have proved themselves a very useful weapon.

Here we have the first example of squadron actions

between tanks. The co-operation of properly organised fleets of tanks with squadrons of aeroplane scouts is only a matter of time, and if we can organise those fleets before the Germans do so we shall win the war with comparative ease in another year or two.

Later again the correspondent of the "Morning Post" with the French Armies, writing on July 12th, said :—

> It is undesirable at present to attempt to discuss the special tactics of tank fighting. One of the officers in a tank section, however, drew my attention to the closeness of co-operation that is necessary between the Air Service and the tanks.
>
> It is common knowledge (he said) that tanks, though, roughly speaking, immune from machine-gun fire, are vulnerable to artillery. It is, therefore, of supreme importance to the enemy to be able to maintain his sausage balloons in the air to control his artillery fire, and it is of equal importance to us that our aviation should bring the sausages down in flames or force them to keep the ground. Aviators are, in fact, our natural friends, for just as we are able to silence the machine-guns that are the deadliest enemy of the infantry, so they can blind the enemy's guns that are the only weapons we have seriously to fear.

Some Questions of Moment.

Here one has corroboration from an eye-witness in July, 1918, of the theories, based on plain common sense and without any claim to prophetic gifts, expounded in this paper for two years previously. Does anyone with any knowledge and intelligence still deny at this date that with adequate fleets of tanks, and with proper co-operation between tanks and aircraft, the war could be brought to an early and victorious conclusion?

Yet is there any certainty that even now the vital importance of tanks is realised any better to-day either by those in High Places, or by the ordinary fool-man-with-a-vote, who is the only person feared by the politicians, than the importance of aircraft was recognised in 1912 and 1913, when some few of us—mostly regarded as cranks and fanatics—were agitating in Parliament and out for an adequate air fleet? Is there any certainty that the present Tank Committee is any more alive to the real importance of tanks than was the Tank Committee which made such an unholy mess of things in 1915, and held back tank development for 18 precious months? One credits the present Committee with absolute honesty and the best intentions in the world, but does it realise itself that it is actually as important to the future conduct of the war as was the Air Board of 1917?

And still more, does the War Cabinet realise the possibilities of tanks? For example, does General Smuts, who seems to be the mainspring of the War Cabinet, realise that the tank is to all other weapons of war what the rhinoceros of his African bush is to all other animals, the irresistible force which masters everything else by sheer weight and driving power?

And, above all, is the Tank Committee encouraging private enterprise and ingenuity as Sir William Weir encouraged the Aircraft Industry in 1917, or is it still fiddling with official designs as the R.F.C. Supply Department was in 1915? If those questions can be answered satisfactorily, then we are well on the road to winning the war. If not, then we still have before us years of the primitive man-to-man and gun-to-gun struggle which has been wasting the produce of the world's labour for the past four years.

A Matter of History.

Some months ago this paper published something of the early history of the tanks, as a horrible example of what to avoid. A certain amount of controversy ensued, but unfortunately pressure of more immediately important and more purely aeronautical events prevented continued attention to the subject. However, the recent tank actions and the increasingly important part which tanks are playing in the war, lead one to believe that one should in the national interests return to the subject.

The following letter, addressed to the writer of these notes by Mr. R. F. Macfie, one of the pioneers of British aviation, and certainly the originator of the scheme for using armoured caterpillars to break up trench warfare, gives certain points in the history of the tanks which for obvious reasons did not appear in previous notes on this subject :—

Sir,—With reference to certain notes on "Tanks" which appeared in The Aeroplane, and the resulting two letters from Col. Crompton, R.E., and Maj. Kerr-Smiley, M.P., may I ask for the privilege of your space for my reply to assist in the clearing up of one or two misconceptions?

It is not my intention to allow my engineering record to suffer because other people wish to pose as successful inventors without justification.

Before specifically answering Col. Crompton and Maj. Kerr-Smiley, it will elucidate the matter considerably to give a little more detailed account of my early efforts than has hitherto been given. In all questions of invention the "previous state of the art" is the starting point, so we will commence there.

When I first started work on the promotion of this idea, a particular condition prevailed which it is almost impossible for people to realise who only heard of Caterpillars after they came into general use in Europe as tractors at the beginning of this war.

This condition was that, although Caterpillars had been built and used experimentally with some success in England a few years previous to the war, as far as their practical adoption commercially, or militarily, or in any other way, was concerned, they were utterly dead. The whole Caterpillar idea had suffered a relapse, and as a practical proposition was discredited amongst British engineers and soldiers in general.

The position was very much analogous to the relapse that the development of the aeroplane suffered in Germany after the death of Lilienthal and in England after the death of Pilcher.

The Caterpillar Slump.

The slump in England of the Caterpillar idea was caused by two events. The first was that Messrs. Hornsby, of Grantham, had built a series of experimental Caterpillar tractors invented by Mr. Roberts, which were tested at Aldershot by the Army authorities without any resulting adoption by the Army, but with a resulting crop of rumoured reasons—mostly irresponsible—as to why Caterpillars were of no practical use for the Army.

All sorts of people made all sorts of suggestions at this time, including the suggestion that they should be armed. The final result, however, was that the Army did not adopt the Caterpillar as a standard service instrument for any purpose more important than demonstrations at the Naval and Military Tournaments at Olympia, and—worse still—Messrs. Hornsby abandoned their Caterpillar experiments on which they had expended much time and money.

The chief defect of these Caterpillars was trouble due to the track picking up stones and jamming in a particular manner called "nut-cracker action" amongst Caterpillar engineers.

The second event was the fact that the Scott Antarctic Expedition's Caterpillar sledges had proved a failure. No one seemed to know that the fault had not been with the Caterpillar tracks in this case. The reason was that the engines gave trouble.

[This trouble was, one believes, climatic, and not attributable to any defect in the engines themselves.—C. G. G.]

First Notions.

When I arrived in London from New York in 1914, I found that the various people with whom I discussed Armoured Caterpillars either knew nothing about them or believed that they had been tried and had proved a failure. Few even knew the difference between the "Pedrail" and the Caterpillar mechanism. No one I met knew that Caterpillars had reached a stage of practical commercial success in ploughing and haulage in the U.S.A.

To me, or to anyone else with experience of what American Caterpillars could do, the mental step towards solving the problem of the construction of a machine capable of crossing trenches and barbed-wire entanglements was no great one. But to anyone who believed the Caterpillars had been tried and had failed, the proposal that such a machine could be built would seem a very wild leap in the dark.

If I had attempted to promote this scheme by immediately proposing to build Armoured Caterpillars I should have failed, and, having had previous experience of the official mind, I would have deserved to fail. The result would have been that the idea would have been definitely turned down officially—which means that it would have been next to impossible to revive it.

I found that Maj. Hetherington was in the "been tried and failed" class of disbelievers. He required a considerable amount of explanatory argument before he would believe that the Holt machine could do what I said it could do. A picture in the

"Daily Mail" assisted in convincing him that they were not still in an experimental stage. It took a very great deal of persuasion to convince him that they would cross ditches.

It may seem strange to people now that there should have ever been any doubt about the ability of this mechanism to cross trenches, but such nevertheless was the case. It seemed to me at the time that almost as many objections were put forward on this point as were put forward against what now seems very simple and obvious (but when first proposed emphatically did not seem simple and obvious), the advantage of loading guns from the breech instead of the muzzle.

The Introduction.

After joining the Armoured Cars I was fortunate in securing a post which put me in a specially advantageous position for the purpose of putting my scheme continually before the only officer whose official responsiblility embraced the recommending or rejection of a proposal of this type—Maj. Hetherington. It was arranged that I was to be the officer in charge of temporary repairs to armoured cars in the field.

This brought me constantly in contact with Maj. Hetherington. I took the opportunity almost daily of urging him to take up the question of Caterpillars with Commodore Sueter and Mr. Winston Churchill, finding it necessary to employ an amount of tact and patience which was far beyond my normal stock of these qualities. About the middle of November 1914, he agreed that he would do so, and from then on kept assuring me that he was negotiating with Commodore Sueter and Mr. Winston Churchill, and that the negotiations were progressing favourably.

I urged him to employ a model and a gap between two piles of books to assist in convincing these gentlemen, and he assured me that he had done so. He described to me a visit which he had made to Mr. Winston Churchill when the latter was carrying on Admiralty business from his bed even though laid up with influenza.

Both this scheme of mine, Maj. Hetherington's own scheme, and Mr. Winston Churchill's scheme were well known amongst officers of the Armoured Car Brigade, and were frequently discussed in Armoured Cars, and in the Air Department, and in aviation circles at the time.

During December, 1914, Maj. Hetherington went about advocating a scheme—which was understood to be his own—for an Armoured "Gasometer" with gigantic wheels "to walk across the Rhine." He discussed this scheme in my presence in various places besides the Armoured Cars Headquarters—at the Talbot Works lunch room, at the Royal Aero Club, and at Dunkirk and Boulogne. At the time I paid little attention to what he had to say on this idea, as I thought that it would be quickly squashed the first time he discussed it at the Admiralty with a professional engineer, but I was mistaken.

At the Admiralty.

The first indication I had that any real progress was being made was when Maj. Hetherington ordered me to be ready to come up with him at six o'clock one evening to the Admiralty. I understood from him at the time that we were going to a committee meeting which had been ordered by Mr. Winston Churchill for the purpose of considering the whole Caterpillar idea. He ordered me to hand over my drawing of an Armoured Caterpillar, and held that drawing in his hand in his car as we went up to the Admiralty.

At the meeting Col. Crompton produced and commenced to explain a drawing. As the drawing was being unrolled I thought I was going to see an elaborate design of Armoured Caterpillar, but when I saw a Land Battleship, a colossal affair with giant wheels, I was literally dumbfounded. The one thing that had never occurred to me was that anyone would take Maj. Hetherington's Land Battleship scheme seriously.

I was still more dumbfounded when I saw that committee take that design seriously. The committee appeared to be very shocked that I did not at once agree with this design, and I was asked what I did propose. I asked Maj. Hetherington to show the committee my drawing, but he said he had left it in his car.

Immediately on my mentioning the word Caterpillar, Col. Crompton ridiculed the whole idea, saying that it was impossible to make the links "long enough or strong enough to span a trench." He appeared to me to be, like many other engineers at that time, under the prevailing impression that Caterpillars were unsatisfactory and unworkable. Sir Tennyson d'Eyncourt asked Col. Crompton if he knew anything of Caterpillars, and Col. Crompton answered that he "ought to know something about them" as he was "an unfortunate shareholder in the original Diplock Syndicate."

I returned to duty at the Armoured Car Brigade the following day, interviewed Maj. Hetherington, explained my astonishment and indignation at what had happened the previous evening, told him that I did not wish to assist him to build any freak machine which would bring ridicule upon the R.N.A.S., and took up the Armoured Caterpillar scheme immediately with Commander Boothby.

Col. Crompton's Letter.

Most of Col. Crompton's letter has already been correctly answered by you in your notes or in the account I have just given.

All through Col. Crompton's letters to you and to the "World," and in the letters and arguments of Maj. Hetherington, both published and unpublished, there rings the continued effort to suggest that what I advocated was merely Caterpillar tractors, and not Armoured Caterpillars. The remark of Col. Crompton that I gave a long lecture to the committee on the wonderful work that the Holt Caterpillar had done for ploughing in the United States is evidently designed to convey that impression. The committee was sitting to consider *the design of a fighting machine*. For what other reason would I deliver a lecture about the virtues of Caterpillars to such a meeting, *and be listened to*, but that I was advocating a Caterpillar fighting machine?

Col. Crompton says I gave him the impression of "being full of ideas, but of having no detailed knowledge of what was required . . .," etc.—in other words, that I was full of ideas, but did not know what I was talking about. The words he uses are words which are used only to describe cranks with half-baked schemes. Besides being an impertinence, his statement is liable to convey a totally false impression.

One remembers that at that time Col. Crompton had no practical experience of any commercially successful Caterpillar, that his ridicule of the Caterpillar turned the whole meeting against it, that his subsequent Caterpillar designs were not adopted, that the only person present who either had experience of the mechanism or advocated the adoption of it for a fighting machine was myself, and that the one person present to whom his own description applied was Col. Crompton himself—*for its truth was proved by subsequent events.*

Perhaps Col. Crompton can explain why the final result of



From a photograph received from a neutral country.

Turkish Camelry retreating after fighting at El Katia, photographed from a German aeroplane.

months and months of deliberation and experiments happened to be my original invention of a tail-steered, climbing, Armoured Caterpillar, which was known to several others besides yourself before I joined the Armoured Cars?

MAJ. KERR-SMILEY'S LETTER.

The most striking part of Maj. Kerr-Smiley's letter is his last paragraph, which says:—"In view of the fact that Officers on the Active List cannot defend statements of this kind under the King's Regulations, I consider it only fair to point out that there are always two sides to every case, and that statements of this kind should not be accepted without a full investigation."

May I point out to Maj. Kerr-Smiley, M.P., that it is not only Officers on the Active List who cannot, under the King's Regulations as applied in war time, defend statements affecting their standing.

A civilian, like myself, whose very livelihood depends on his reputation, cannot defend himself against totally distorted stories conveying an absolutely false idea of this matter: stories which systematically ignore evidence and protests, both written and verbal, such as have been passed up, and, I am informed, are still being repeated, behind closed doors in official circles, where they are safe from any exposure by me.

As Maj. Kerr-Smiley says, there are two sides to every case, and I will suggest, since he is a man of so much fairness, that he should take the trouble to do a little "full investigation" on his own account *on the other side.*

(1) Col. Crompton and Mr. Diplock were not engaged in re-designing the Diplock Pedrail or Caterpillar as an *Armoured vehicle* before I joined the Armoured Car Force.

(2), (a), (b), and (c), I handed drawings to Maj. Hetherington before four witnesses, all of them now officers. Maj. Kerr-Smiley can have an opportunity later of learning the value of these as well as other statements made by me.

I doubt very much whether "all the officers primarily concerned are equally convinced" that I "submitted nothing but an elementary treatise on Caterpillar Tractors which did not contain any novel ideas or information," though I know that systematic efforts have been made to spread this idea. The only occasions when I was ever allowed to pass up anything in writing *at all* to my superiors was when I was specifically ordered to. This treatise was the result of orders I received to write an article on the work of Caterpillar Tractors in the United States of America, and it was written in an effort to show that the Caterpillar was not a failure but a success there.

It was not submitted to Maj. Hetherington but to Commodore Sueter. Maj. Hetherington seems to have shown this report or a copy of it to various people, as it happens that it is the only paper that I wrote on Caterpillars which does not specifically employ the words "*Armoured Caterpillar.*" He makes no mention of the fact that he also had referred to him by his Commanding Officer another paper of mine which was entirely devoted to *Armoured* Caterpillars, and which included as suggestions all the tactical "novelties" which afterwards took place at Cambrai.

Let Maj. Kerr-Smiley refer to that paper. And perhaps he can explain why I was ever allowed by the Admiralty to start a machine at all. And if he has the privilege of access to documents, can he say what the design was? And, if he cannot, why did he write such a letter to you?

At the end of your notes on Page 634 of your issue of Feb. 13th, you say it is a pity that I have not had an opportunity of presenting my evidence before a competent and unprejudiced tribunal. I quite agree, but there is not much likelihood of an unprejudiced and competent tribunal being appointed by a Government Department which allows intrigues such as those referred to in this letter to take place and ignores repeated protests made both at the time and afterwards.

I do not intend to be persuaded into going before any whitewashing tribunal or any tribunal which cannot obtain *all,* not *some,* of the documents connected with the question.

Nearly a year ago, and about four months after I protested against the allotting of false credit in the House of Commons, I was approached by a Mr. Swinburne, a well-known consulting engineer, of Victoria Street, who stated that he had been asked by the Admiralty to "report on the invention of the 'Tanks.'" He asked if I would attend an investigation. I said I would. The fact that I have heard nothing since convinces me that the Admiralty are not really interested in arriving at the true history of the Tanks.

It will not be difficult for me to have the question of the invention of "Tanks" settled definitely once and for all in *quite another way after the war.*

I think it fair to say that the only officer I came in contact with in the R.N.A.S., who took the trouble to give me even a full hearing, or who appeared to grasp the tactical scheme or understand the features of the design of machine necessary to apply it, was Commander Boothby. To this officer is due the entire credit that Armoured Caterpillars or "Tanks" ever got beyond the "talking about it" stage.

I should like to point out that the events dealt with in this letter took place *before* the appointment of the present Controller of the Department of Mechanical Warfare Supply.

So much for the purely mechanical history of Tanks. As regards their tactical use, I wish to place on record here the fact that you yourself were the first person to comprehend and appreciate the tactical scheme involved in my proposals concerning Armoured Caterpillars. Our first discussion on this subject took place before my joining the Armoured Cars, and your criticisms distinctly clarified the whole scheme in my mind.

It is interesting to notice that Tanks are now at last being used in the manner upon which we then agreed. It is to be hoped that the Germans to-day have not improved much on our schemes of 1914.

(Signed) R. F. MACFIE.

84, Kingsway, London, W.C.2.
Feb. 23rd, 1918.

A CRITIC'S VIEWS.

The following letter was received from Major Kerr-Smiley after Mr. MacFie's letter, which appears hereinbefore, came to hand. Major Smiley's references to Mr. MacFie apply to the previous article:—

HOUSE OF COMMONS, February 20th, 1918.

SIR,—With reference to my letter published under the heading of "The Tank Question Again" in your issue of February 13th, I should be much obliged if you will allow me to make the following criticisms of your comments.

In your original article in the issue of January 30th, you make the following statement:—

"Apparently about the time at which he (Mr. MacFie) joined the armoured cars, various and sundry people, including Col. Crompton and Major Hetherington, were at work on the landship idea, but their designs and the tactical methods which it was then proposed to adopt were both impractical, and the caterpillar mechanism was not included in their design."

This has been pointed out as devoid of foundation, and in your comments on Col. Crompton's and my letter this statement is apparently waived and commences a criticism on various forms of caterpillars. This obviously is beside the point, when the fact under discussion was, whether these officers were at work on caterpillar traction or not. That they were, there is happily an abundance of evidence to prove.

With reference to the comments as to whether drawings were submitted to Major Hetherington or not, C.G.G.'s comments are not to the point, as it has been definitely stated in the "World" that Mr. MacFie neither submitted nor handed to him at any time a paper connected with or even hinting at armoured caterpillars. The only paper that he did receive from Mr. MacFie was an elementary treatise on caterpillar tractors (such as were already in use in the army), which only contained such information as would be found in the descriptive matter of a maker's catalogue, etc.

With reference to the comments which insinuate that Major Hetherington was so devoid of intelligence that he would be unable to appreciate anything but a general arrangement drawing is merely misleading, and if such a position had existed, the position as far as C.G.G.'s remarks are concerned would be reversed for the following reasons:—

(a). C.G.G. states that Mr. McFie did show him (C.G.G.) drawings of an armoured caterpillar.

(b). C.G.G. further attempts to show that Major Hetherington was merely trying to make a quibble as to what were general arrangement drawings and what were detailed drawings. That he was shown nothing I have already pointed out, but to continue further with C.G.G.'s deductions the position appears to me to be distinctly reversed, as during that period Major Hetherington as a member of the Committee was in possession of all available catalogues pertaining to caterpillar traction, whereas C.G.G.'s qualifications as an expert on caterpillars seems to this day to be somewhat undeveloped in view of the fact that in a letter written by him as late as February 5th, 1918, he states "that he was under the impression that the Diplock Pedrail was not a caterpillar (which it is), but a wheel which carried a number of hinged pieces on the tread."

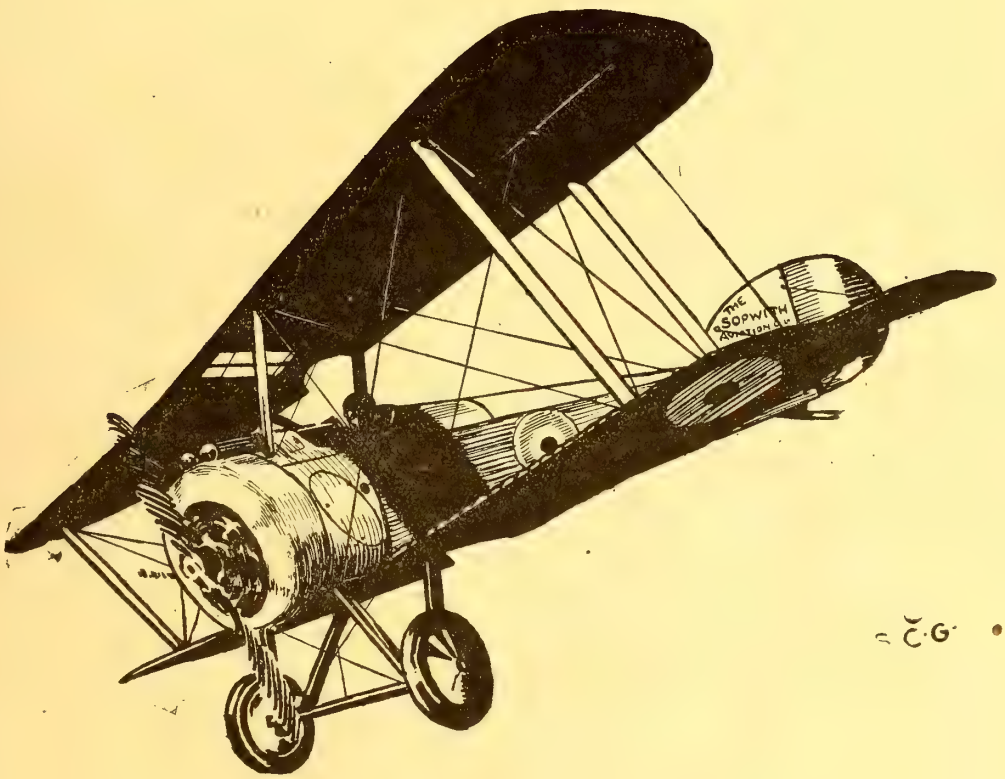
Assuming, therefore, that even had these drawings been submitted to both of these gentlemen, I am inclined to think that Major Hetherington's judgment would have been the more valuable.

I do not for a moment think that Major Hetherington has ever claimed to be an engineer, as he has only served three years in engineering works, but it would certainly be of interest to me to know what engineering degrees C.G.G. holds and what engineering achievements he has to his credit.

Finally the insinuations that Mr. MacFie not being called to further meetings of the Committee (a committee comprising several well-known and responsible officials) because he knew too much, is unworthy of C.G.G.'s pen.

P. KERR-SMILEY (Major).

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A Reply.

Mr. MacFie's letter answers beforehand most of Major Kerr-Smiley's points, but, as Mr. MacFie suggests, the whole argument can only degenerate into a pettifogging quibble unless and until a proper inquiry is held which is empowered to deal with sworn evidence.

Such an inquiry would only deal incidentally with the question of who originated the Tanks. Its chief task would be to discover and punish those whose incapacity or intrigues resulted in delays which caused armoured caterpillars of a general type which was designed in 1914 to come into action for the first time, and even then under wholly wrong tactical conditions, in September of 1916, when they were already hopelessly out of date. Secondly, that inquiry would discover why, even after the 1916 type was produced, so miserably little progress was made with tank design by the various gangs of so-called "experts" who have succeeded one another in the tank department? Thirdly, it would investigate as to why tanks were used in something like the proper tactical method for the first time in General Byng's attack on the Hindenburg Line in 1918?

Neither the alleged engineers who have produced the tanks nor the soldiers who have used them—excepting always the gallant and misused tank crews themselves—have the remotest reasons to be proud of their efforts.

As regards Major Smiley's personal references to myself, I would merely point out that one of the manifestations of the Diplock Pedrail was a traction-engine with pads round the tread of the driving wheels, which pads resembled elephants' feet. It is some years since I saw one of them, but the memory of it is very clear. That type, I believe, existed long before the Diplock attempt at a caterpillar mechanism. And, so far as I can discover, the Diplock caterpillar was not designed originally to be a driving mechanism at all, but to be hauled by a horse. Major Smiley, or his prompter, ignores that point entirely.

Finally, as regards engineering degrees, some 25 years' continual experience of engineering products and production, including two years at an engineering school, and four years in workshops, has confirmed me in my belief that the more letters a man has after his name, and the more he uses them, the less use he is as an engineer. The belettered degree-hunter is a mere competition-wallah, or a self-advertiser, and not a producing engineer.

Degrees and titles do not indicate capability nor critical judgment. For example, one gathers from his title that Major Smiley is a soldier of sorts. Yet nothing in the records of military aeronautics nor of tanks indicates that he possessed sufficient military capacity to interest himself in, or lend his social weight or military prestige to, the task of developing or aiding the progress of the two greatest military weapons which have been invented since the introduction of artillery.

As to Major Smiley's last sentence. The whole history of the war is full of instances of competent men who have been frozen out by incompetent officialdom because they know too much.

Our Chance.

Having, as Mr. MacFie has said, discussed the whole working of these strange engines of war, and the scheme for their tactical use, with him before he ever joined the Armoured Car Division, R.N.A.S., one has actual personal knowledge of the appalling delay which has taken place in the development of tank warfare. These letters may indicate how and why such delays have occurred. The one thing for which we have reason to be thankful is that the Germans have been nearly as slow as we were. For once we have reason to be glad of our Teutonic relationship.

We have still full opportunity to take the lead in developing the land-ship into a mobile arm in co-operation with aircraft. As in aircraft design, there is much room for improvement, and there are many noxious and nocuous individuals who will have to be cleared away before development of engines and other mechanism by the best brains in the country can have full play. But we still have the chance of acquiring Land Power commensurate with our Sea Power and Air Power. Shall we have the intellect and energy to take our chance, or are we still holden down by selfishness and intrigue?—C. G. G.

CHEVRONS.

The R.A.F. is forbidden to wear chevrons. Why?

There is much to be said against wearing chevrons at all, but now that the Navy and Army have both adopted the principle, why should the R.A.F. be barred—or dis-barred, perhaps one should say?

Moreover, if a sailor or a soldier who has done so many years on active service joins the R.A.F. as an attached officer, and not with a temporary R.A.F. commission, is he to be deprived of his distinctions? To deprive an R.N.A.S. or R.F.C. officer or man of his chevrons is just as reasonable and as fair—no more and no less—as it would be to take away all the V.Cs., D.S.Os., M.Cs., M.Ms., D.C.Ms., and so forth which have been won by R.A.F. officers and men on active service, and make everybody start fresh in the R.A.F. with a clean chest.

How would some of the distinguished general officers of the R.A.F. like it if they had to discard their rows of ribbons just because they were not won on duty with the R.A.F.? One can assure the High Authorities that to the humble air mechanic, or the poor but honest equipment officer who has borne the discomforts and dangers of active service for the past three years or more without chance of distinction, his chevrons are as precious as are his ribbons to any general officer.

Can it be that the order against wearing chevrons has been issued to prevent people from drawing rude, if right, conclusions from the number of officers in uniform employed at the Air Ministry who have never qualified for a single chevron? One quite recognises the fact that many of the really good men at the Hotel Bolo—as it is familiarly called—have been trying for years to get to the front and have not been allowed to go, but there are many more who could have gone and have skilfully avoided going.

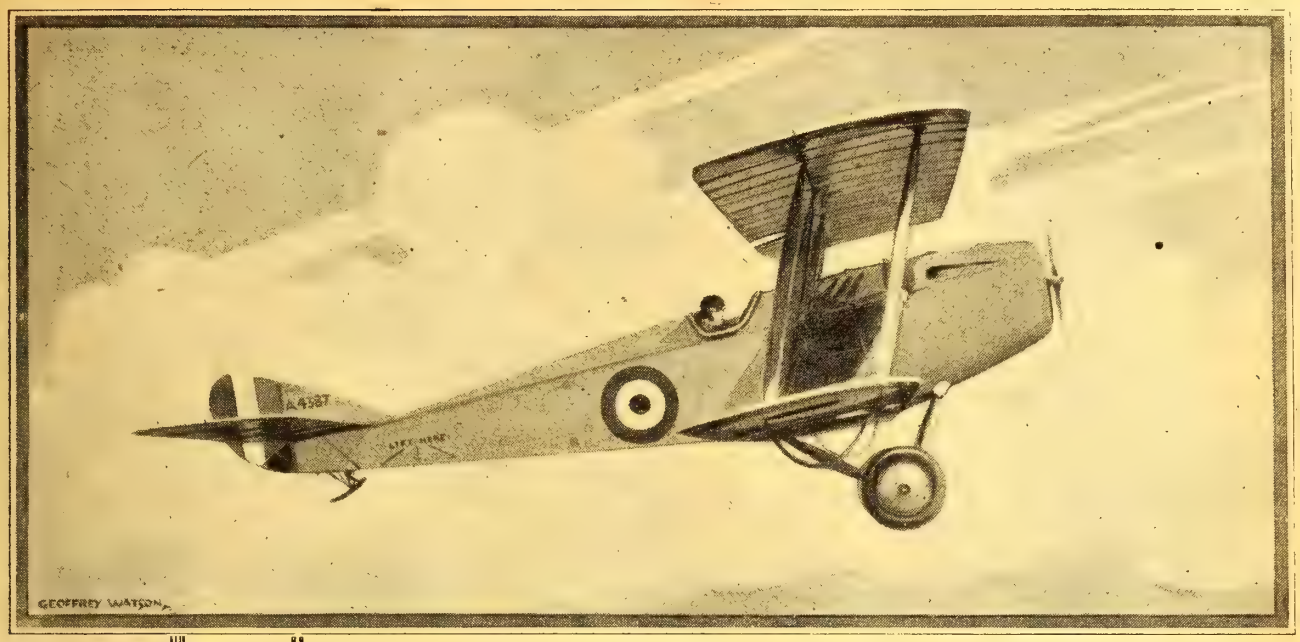
The way out is really quite simple, if it is desired to avoid invidious distinctions. No officer employed permanently on the Air Ministry Staff should be allowed to wear chevrons, but when he again goes on active service he should be ordered to put up whatever chevrons he may be entitled to wear. Active service would, in such case, include flying at home, but home flying—except regular sea-patrols—should not be a qualification for chevrons. That is to say, a pilot flying at home could wear chevrons won overseas, but a year's flying at home would not qualify him to put up an extra chevron.

Furthermore, there should properly be a distinction between Naval, Military, and Air Force chevrons. For which purpose a special R.A.F. chevron would have to be designed. That is to say, R.N., R.N.R., and R.N.V.R. people who qualified for Naval chevrons before joining the R.N.A.S. or R.A.F. should wear Naval chevrons for their Naval service and R.A.F. chevrons for the rest. Similarly Army people should wear Army chevrons for their military service up to the time of joining the R.F.C. or R.A.F. And the R.N.A.S. and R.F.C. people who have never served outside the Flying Services should wear the R.A.F. chevrons and no other.

This at any rate would get over the trouble of R.N.A.S. people wearing Naval chevrons and R.F.C. people Army chevrons, and everyone would then have his just due. For instance, a man who joined the Army in 1914 and transferred to the R.F.C. in 1917 would now wear a red chevron, two blue ones, and an R.A.F. chevron, whereas one of the First Five Squadrons, R.F.C., would wear four R.A.F. chevrons. It is all perfectly simple and fair.—C. G. G.

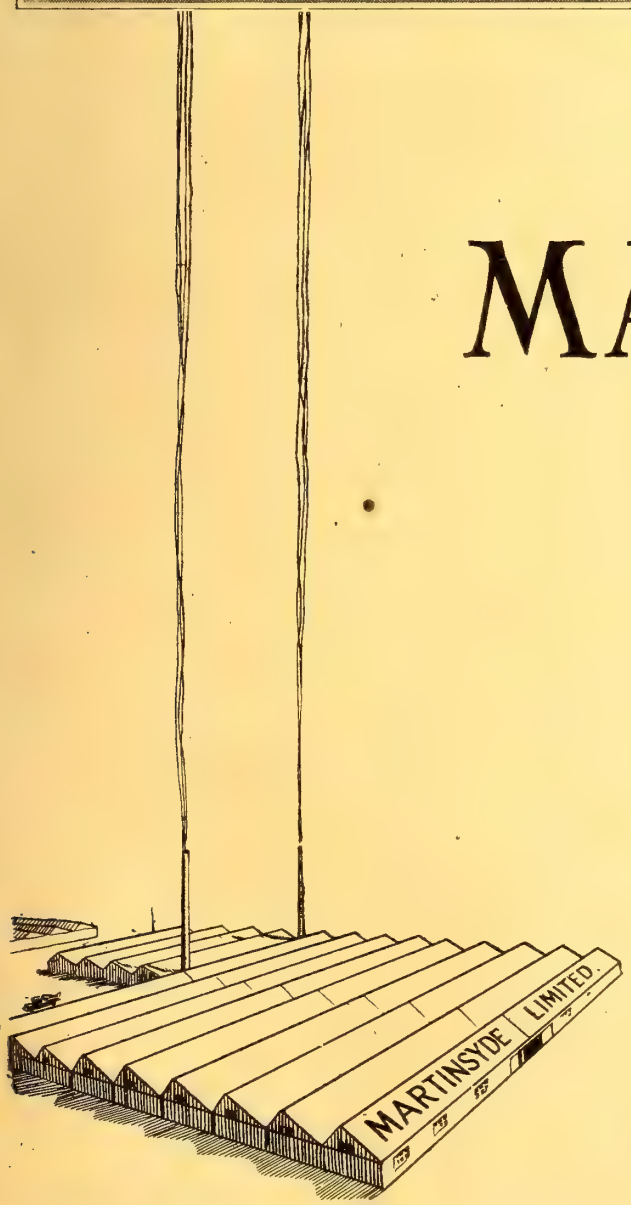
HONOUR WHERE DUE.

Apropos a recent paragraph in this paper referring to members of Parliament with aeronautical experience, a reader points out that at least one member of Parliament has done a large amount of flying on active service. The member in question is Capt. Wedgwood Benn, D.S.O., who has flown for a long time as an artillery observer in France and elsewhere in spite of his age. He is regarded as one of the soundest artillery observers in the corps.





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THE FUNCTIONS OF THE R.A.F.

The Secretary to the Air Ministry issued the following for publication on July 19th :—

There appears to be some uncertainty as to the respective functions of the Air Ministry and certain other Departments of his Majesty's Government. The following is accordingly circulated for general information.

The Air Ministry was established to take over control of the Royal Air Force, which was formed on April 1st by the amalgamation of the R.N.A.S. and R.F.C.

The Ministry supplies to the Admiralty and War Office contingents of the Royal Air Force, which, for purposes of operations by sea and in the various theatres of war, are under the supreme naval or military command. There is also an Independent Air Force operating under the Air Ministry.

The actual provision of aeroplanes is the responsibility of the Ministry of Munitions. A special group in this Ministry has been set up to meet the needs of the Air Ministry. Departments dealing with technical development, supply, inspection (usually termed the A.I.D.), contracts, finance, etc., all come within this group. The various addresses are as follow : Supply, Contracts, and Finance Departments, York House, Kingsway; Technical Department, Central House, Kingsway; Inspection Department, Clement's Inn, Strand.

Lighter than air craft remain under the Admiralty, the Air Ministry supplying the personnel from the Royal Air Force. The responsibility for the defence of London against air raids rests with the War Office, the Air Ministry supplying aircraft and personnel for air service in connection with it.

In connection with the Air Ministry the following main Committees perform the functions indicated : (1) The Advisory Committee for Aeronautics, York House, Kingsway, W.C.2, is engaged on aeronautical research generally and the investigation of the fundamental problems of flight and the subordinate questions to which it gives rise. (2) The Air Inventions Committee, 2, Clement's Inn, Strand, W.C.2, investigates all inventions submitted by the public on aeronautical subjects, and submits to the Technical Department of the Directorate of Aircraft Production those considered worthy of development. (3) The Accidents Committee, Air Ministry, Strand, W.C.2, makes special investigation into any accidents which require it.

R.N.A.F.

What is the R.N.A.F.? In the "Observer" on Sunday last the Admiralty announcement concerning the raid on the Zeppelin sheds at Tondern on July 19th stated that it was carried out "by R.N.A.F. machines" dispatched from the vessels. Monday morning's papers called them Royal Air Force machines. Did the "Observer," an extremely accurate paper, make a mistake, or did the Admiralty use the letters R.N.A.F. on purpose, and did the Air Ministry have them altered in Monday's papers after seeing them for the first time on Sunday in print?

R.N.A.F. can only stand for Royal Naval Air Force, except when one uses the initials jestingly to mean Royal Naval Air Force to distinguish sea-going aeroplanes from land machines flown by naval pilots over land. Anyhow, straws show which way the wind blows, and, whichever meaning one puts on the initials, it seems to be evident that in some official quarters there is a clear distinction between the Navy's aeronautical service and the Army's, as well as the Independent Air Force.

The Air Ministry Communiqué discloses a still stranger anomaly. All aeroplanes and engines—as may be seen—are under the control of the Air Ministry, which lends to the Admiralty and the War Office whatever the Navy and Army may need, retaining some for the Independent Air Force.

But airships are solely the property of the Navy, which controls their construction, though one assumes that the Navy has to get the engines for its airships from the Air Ministry, or, at any rate, from that department of the Ministry of Munitions which is also under the Air Ministry. And then the Royal Air Force supplies the personnel for the said airships, though the said personnel have nothing in common with the aeroplane side of the R.A.F., both their training and their operations being naval.

Surely, it would be simpler and more sensible to adopt forthwith the only logical course, and cut the R.N.A.F., or R.N.A.S., or whatever the authorities like to call it, clean adrift from the Air Ministry and let the Admiralty have complete control of all seaplanes and airships and their personnel. Thus, not only would much tanglement and confusion be saved, but both aeronautical branches would be free to work along their own technical lines, so that if one technical department made a grave error the other would be able to help it out of its trouble. The Navy has helped the Army with big guns, which the Army would not have had at the critical moment but for the separate gunnery department of the Navy. The R.N.A.S. helped the R.F.C. with engines and aeroplanes at its most critical period. At present, with our single line of technical departments in the Air Ministry, we are like an Army which is being fed by a single line of rails. We have no alternative line in case of trouble. Therefore, from all points of view, technical and every other, the sooner the R.N.A.F. becomes a concrete entity the better.—C. G. G.

THE ROYAL AERO CLUB AND THE TRANS-ATLANTIC FLIGHT.

The much-boomed "Daily Mail" competition for the Transatlantic flight seems to be in rather a queer position. All aeronautical competitions in this country are *ipso facto* under the control of the Royal Aero Club. Now, the R.Ae.C. very wisely and properly refuses to sanction the holding of competitions in war time, partly on the ground that British manufacturers, being entirely under Government control, cannot carry out the necessary tests and experiments which would enable them to produce successful machines, and more particularly because all energies should be devoted to getting on with the war and not to sport.

It is true that a Transatlantic machine would be a very valuable war machine, but the arrangement of the competition, *qua* competition, would waste much time and energy. And, in any case, as the "Mail" must surely know, the Atlantic will certainly be flown before long by Service machines with Service pilots belonging to one or other of the Allied nations. Therefore, while there may be keen friendly competition between the Allied Services for the honour of being first across, there cannot, obviously, be any commercial competition between manufacturing firms or between professional aviators, and so the competition in its proper sense cannot exist.

Possibly it is the intention of the "Mail" to present its £10,000 to the Service aviator who first reaches Europe by air from America. In such event one would remind the "Mail" that it has been definitely laid down by our own Authorities that Service aviators may not receive rewards—other than Service rewards—for doing their duty. And, as British Service aviators are thus barred from winning the prize, it would be grossly unfair to leave it on offer for aviators of other nations which may have different ideas on the subject of Service honour.

It will be well if the "Mail" will recognise this fact and make clear what are its intentions, otherwise the public are liable to say that it is easy enough to offer a £10,000 prize when one knows that it cannot be won, or that the winner will not be allowed to accept it. The simplest thing to do seems to be, now that the "Mail" has advertised its own generosity so largely, to announce that the £10,000 will be given to the leading aeronautical charity of the nation whose pilots first bring a machine across the Atlantic by air. If they prove to be British pilots, one feels sure that the R.A.F. Aid Committee and the Flying Services Fund will be able to dispose of the prize to excellent advantage.—C. G. G.

GOVERNMENT CHANGES.

Major-Gen. the Right Hon. J. E. B. Seely, C.B., D.S.O., M.P., has been appointed Parliamentary Under Secretary to the Ministry of Munitions, in succession to Sir L. Worthington Evans.

General Seely will act as Deputy Minister of Munitions, and will continue to discharge his special duties as member of Council for the Warfare Group of the Ministry of Munitions.

The "Morning Post" says :—

"That Major-Gen. J. E. B. Seely should have been chosen to fill the post vacated by the member for Colchester means, of course, that he will give up his military career, in which he has won distinction—alike in the Boer campaign and in this war. He is a close friend of Mr. Churchill, the Minister of Munitions, which is a sufficient explanation of the selection. He was Secretary for War at the time of the Curragh affair in 1914."

[Lt.-Col. Seely, as he then was, represented the War Office during the pre-war agitations in favour of an adequate air force. On several occasions Mr. Joynson-Hicks and others convicted him in the House of Commons of making misleading statements concerning the equipment of the R.F.C., and the last occasion discredited him entirely, so that the Curragh affair proved the last straw and caused his downfall. His personal bravery in undisputable, and one only hopes that his experience of active service has opened his mind so that he will in future realise that the lives of men at the front are of greater value than cheap political scores at home. If he tells the truth in the Commons as bravely as he risked his life in France he will be of great value to the House and to the Government. One commends Mr. Ian McPherson to him as a model for his future conduct. Possibly his experience with tanks and bridges at Cambrai has broadened his views on mechanical matters, and so may tend to accuracy of statement concerning munitions.—Ed.]

The Minister of Munitions has appointed Maj. A. H. Burgoyne, M.P., to be Controller of the Priority Department, in succession to Sir Edgar Jones, M.P., who has resigned the appointment.

[Major Alan Burgoyne should be very useful to the Ministry, especially as regards aeronautical material. He has been keenly interested in aviation for many years, and once offered a handsome prize for a flight across London. During the agitations in favour of an adequate Air Force by the Parliamentary Air Committee he was one of the moving spirits, and acted as Secretary of the Committee. He is full of energy, has great mental activity, and real ability, and is undeniably keen on getting on with the war. He has seen much service in India, where he was concerned with Lord Montagu in mechanical transport.—Ed.]

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THE R.N.A.F. AT TONDERN.

The journal "Politiken," of Copenhagen, publishes the following report in regard to the three British aeroplanes which attacked the Zeppelin sheds at Tondern, one of the most important stations for air attacks on England, on July 19th :—

Having passed the coast about 4 a.m., the three machines took the direction of Tondern. Between 6 a.m. and 7 a.m. they returned at a tremendous speed. At the same time some German warships were seen off the coast. These fired on the British machines, which were also chased by German aeroplanes. At the Danish border the fight stopped and the British passed over Danish territory. The Germans took a course oversea.

One British machine landed near Bramminge (40 miles north of Tondern and about 12 miles from the coast of Jutland). The aviator asked to be brought to Esbjerg (on the coast west of Bramminge), where he was interned in an hotel. Half an hour later another machine landed, the pilot of which was interned at the same hotel in Esbjerg. About 7 a.m. the last machine landed near Klegod. The aviators were very reticent, but said they intended to reach the Zeppelin shed at Tondern. They are of opinion that they have effected very important results, inasmuch as a great ammunition dump near Tondern exploded owing to bombs dropping.

All day warships were seen off the west coast of Jutland, supposed to be both German and British ships. British warships opened a lively fire on German aeroplanes, one of which is said to have fallen in the sea off Sönderho. From there the damaged machine was seen floating in a northerly direction.

The "Times" correspondent at Copenhagen stated on July 19th that two British machines, other than those mentioned by the "Politiken," were forced to descend on the sea.

According to the "Ribe Stiftstidende" of the same date, an eye-witness of the aerial attack on Tondern says that he saw three British aviators bomb the place where the airship sheds are situated. Between 20 and 30 bombs were dropped, but only four hit the great hangar. The walls, being constructed of stone and steel, are non-inflammable, but the inside was burnt out and two Zeppelins were destroyed. The fire lasted half an hour.

The Exchange Telegraph Company's message of July 20th says :—It is officially stated from Berlin that three British aviators made an early morning attack on the Zeppelin hangar near Tondern. No material damage was done and no persons killed.

It is learned from a reliable source that one of the British aviators succeeded in destroying a large stock of munitions outside Tondern. A violent explosion took place, and undoubtedly a very great number of people were killed.

While two of the aviators are interned at Esbjerg, the third, who landed near Ringkjöbing, obtained petrol and will make an attempt to get home.

WAS IST DAS?

The following appeared in most of the daily papers of July 19th :—

The Royal Air Force will soon have swarms of a new type of aeroplane at the battle front, which is likely to add greatly to the difficulties of the Germans.

The new machine—a brilliant example of the constructor's art—is capable of carrying with its pilot and observer a great weight of bombs, machine-guns, and other equipment to an altitude of more than 20,000 feet in an extraordinarily short time.

Soaring, as the new machine will, above the average range of guns and German aviators, it will be able to cross the fighting lines, drop its bombs, and return home swiftly for a new load. It is so fast, even at great altitudes, that long distances can be accomplished in the shortest periods, and bombing raids which, with the older type of machine, would perhaps need a whole day's preparation, will now be carried out within a couple of hours.

Its engines are completely reliable, and the risk that they might fail when a hundred miles over the enemy lines—a risk too common with some earlier types—no longer exists. It says much for their supreme value that so far not one of this type of aeroplane has been brought down, in spite of the Hun's utmost efforts.

When the weather will not permit high flying, as is often the case in the winter, these machines will fly low, and so great is their speed that all but the fastest of modern scouts will be left well behind them.

The utmost skill and nerve are needed to fly these machines. The observer must not only be able to ward off hostile aircraft by accurate machine-gun fire, but he must also have an expert knowledge of map-reading and aerial navigation, since when covering long distances at great heights it is extremely difficult to find one's way by any landmark.

[It would be interesting to trace the genesis of this article, which is about as fine an example of journalistic ineptitude as one has seen for some time. Evidently, it is intended to have some effect, but one cannot see on whom it is intended to operate. Is it intended to scare the Hun? If so, the writer must have a fairly feeble knowledge of Hundom. Is it intended to inspire confidence among the British Public in the ability of British manufacturers? If so, it is unnecessary, and, anyhow, is not likely to tell them anything they can understand. Is it intended to set German agents searching for this phenomenal machine? If so, the writer ought to be locked up. Is it intended to give information to people technically interested in aeroplanes? If so, it is mere waste of time and paper, for everything claimed for this marvel might equally well be claimed for any one of half a dozen machines. The last paragraph is the purest tosh ever written, and reminds one of nothing so much as of certain advertisements for a company flotation which infested the press some months ago. It also might be taken as an attempt to scare people off joining the R.A.F. on account of the danger involved in flying this latest alleged air-beast.—Ed.]

THE POSSIBILITIES OF PARACHUTES.

The following letter has been received for publication :—

Sir,—Our best thanks are due to you for the article on the "Guardian Angel" Parachute in your current issue, which we regard as welcome first-fruits of our demonstrations of its action in public. We hope by this means to prove to flying officers, who care to examine and test our apparatus, that it does what we claim it will do.

It is astonishing, but none the less true, that our A1 type parachute, shown on the 13th inst., has been in its present standardised form for two years, with all its capabilities fully developed for the purpose for which it was invented—life-saving in the air—and yet Major Baird, as the official mouthpiece of the Air Ministry in the House of Commons, was instructed to say what he did in reply to Mr. Morell's questions of March 20th and June 13th!

It is, perhaps, right to say here that we have not the pleasure of knowing Mr. Morell personally, and his questions in the House were not in any way prompted by us. Our best answer to Major Baird's official replies that no parachute suitable for use from an aeroplane has yet been arrived at, and that the great majority of accidents occurred under circumstances which precluded the hope that a parachute would be of any value, are these demonstrations from our own aeroplane, so that all may be free to see and judge for themselves whether what we claim for it is or is not correct.

The Air Ministry and ourselves know quite well that the parachute has been used for many months from aeroplanes for military purposes without difficulty or accident, so there are two things incomprehensible to us, Major Baird's replies, and why our requests for the provision of training classes in the use of parachutes on the training grounds have not long since been complied with.

As a matter of fact, we have, at great expense, carried out successful research work, which the Government should themselves have undertaken, in the interests of the Flying Services.

The Aeroplane has the reputation of always getting at the true inwardness of matters which it investigates, and it was thus only in accordance with this distinction that its representative, Mr. W. L. Wade, at last week's demonstration most pluckily volunteered to make a drop in this parachute, with the Payze and Boyle attachment, and incidentally lowered the low level record from an aeroplane to 400 ft.

In this regard, it may be of interest to quote the previous records of the "Guardian Angel" Parachute, so far as they are known to us.

By Sir Bryan Leighton, Bart., from an S.S. Airship, speed 12 to 15 m.p.h.; height, 900 ft.; August 5th, 1916.

By Sir Bryan Leighton, Bart., from a kite balloon, in a 60 mile gale of wind; height, 350 ft.; August 29th, 1916.

By the late Capt. C. F. Collett, M.C., R.F.C., S.R., from an aeroplane; speed, 60 m.p.h.; height, 600 ft.; Jan. 13th, 1917.

By Maj. T. Orde Lees, R.F.C., and Hon. Lt. A. E. Bowen, R.F.C., from Tower Bridge; height, 153 ft. 6 ins.; Nov. 11th, 1917.

(Signed) E. R. Calthrop.

AIR WORK IN THE SECOND BATTLE OF THE MARNE.

The special correspondent of the "Morning Post," writing from the French front on July 21st, says :—

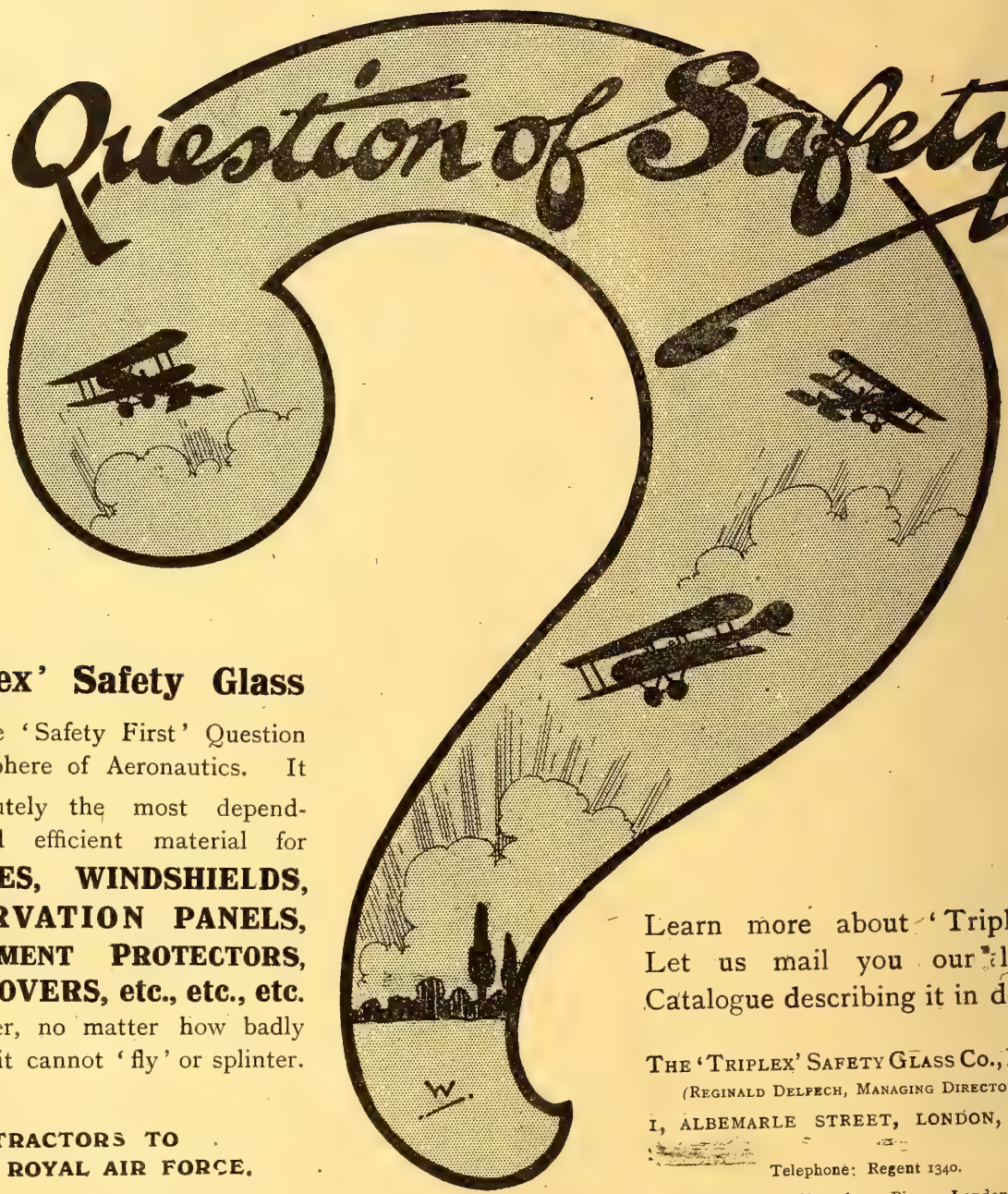
British co-operation has not been restricted to the immediate Reims sector, but our Air Service has joined hands with the French. The officer in charge of the French unit with which they are working spoke enthusiastically of the rapidity with which the British aviators opened their attack. They reached the ground assigned to them in the evening; and on the morning of the next day they began attacking the enemy, harassing him with bombs and machine-gun fire. The gallantry of their conduct and the importance of the results they have already achieved has won them a considerable number of Croix de Guerre actually given on the field of battle.

AEROPLANES IN SIBERIA.

The military correspondent of the "Yorodzu" (Tokyo) reports on July 9th that two German aeroplanes which participated in the fighting at Novo Nicolaievsk are being transported to Khabarovsk, on the Amur. Six others are at Irkutsk, all piloted by Germans. In Russia proper 100 machines have been used against the Germans, and there is every reason to believe that these also are being transported eastwards.


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GEOFFREY WATSON

FROM THE "LONDON GAZETTE."

WAR OFFICE, July 16th.

The King has been pleased to approve of the award of the Military Medal for bravery in the Field to the following Non-commissioned Officer and men :—

P/S4/236974 Serjt. A. S. Allan, R.A.F. (Perth).
7467 1st Cl. Air Mech. (Actg. Cpl.) E. R. Bidewell, R.A.F. (London, N.).
58471 2nd Cl. Air Mech. W. E. Millar, R.A.F. (Peckham)
8609 1st Cl. Air Mech. (actg. Cpl.) R. B. Watson, R.A.F. (North Hants).
12660 1st Cl. Air Mech. A. Williams, R.A.F. (Glamorgan).

AIR MINISTRY, July 16th.

R.A.F.—The follg. temp. appt. is made :—Staff Officer, 2nd Cl.—(P.) Lt. (temp. Capt.) C. E. Wardle, and to be temp. Maj. while so empld., June 27th.

FLYING BRANCH.—Capts. to be temp. Majs. while empld. as Majs. (A. and S.) :—P. Huskinson, June 23rd; B. E. Baker, D.S.O., M.C., G. C. Bailey, D.S.O., J. C. Griffiths, H. Heming, R. E. A. W. Hughes-Chamberlain, T. R. Irons, H. W. G. Jones, M.C., R. N. Montagu-Stuart-Wortley, D. O. Mulholland, A. G. Moore, M.C., R. B. Mansell, A. D. Pearce, W. R. Read, M.C., A. H O'H. Wood, July 1st; J. C. Slessor, M.C., July 3rd; W. E. F. Davidson, H S. Lees-Smith, July 6th; D. J. Sheridan, E. R. Vaisey, July 12th.

Lts. (temp. Capts.) to be temp. Majs. while empld. as Majs. (A. and S.) :—S. W. Dunckley, May 1st; F. T. Digby, D.S.O., D.S.C., J. B. P. Ferrand, D.S.O., June 23rd; W. T. F. Holland, W. C. Mackey, July 1st; A. M. Shook, D.S.C., July 4th; C. R. Cox, July 6th; J. B. McCudden, V.C., D.S.O., M.C , M.M. (since killed), July 9th; H. G. White, E. L. Williams, M.C., July 12th.

Lts. to be temp. Capts. while empld. as Capts. (A. and S.) :—(Hon. Capt.) G. S. Abbott, June 23rd; J. G. S. Candy, July 6th. Capt. F. H. Mardall to be Capt. (A. and S) from (Ad.), April 1st.

Lts. (Obsr. Officers) to be Lts. (A. and S.) :—V. A. Lanos, W. Franklin, June 7th; L. O. Stocken, W. L. Yorath, W. E. Davis, M.C., C. G. Vandyk, June 11th; P. Wood, T. Brownrigg, June 12th.

(Hon. Capt.) S. H. Holland, and to be Hon. Capt., June 13th.

The follg. are granted temp. commns. as Sec. Lts. (A. and S.) :—D. W. Beard, April 3rd; A. H. Hull (Prob. Flt. Officer, late R.N.A.S.), May 15th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts.) (A. and S.) :—H. Shone, April 9th; H. L. Pennal, April 20th; M. J. Carroll, April 25th; R. F. Reid, April 28th; L. W. Sellar, May 3rd; M. E. Miller, May 22nd; A. H. Bradley, M. Watt, May 31st; H. W. Bingham, June 1st; S. C Booth, June 4th; D. H. Keevil, June 6th; G. Bannerman, W. F. Stevens, W. A. Hunter, June 8th; M. J. Poulton, C. D. Notley, F. W. Foster, F. Buckle, S. A. Forberger, June 9th; A C. Porter, S. G. Williams, L. M. Frederick, J. W. Pope, June 10th; V. G. Brindley, F. D. Butcher, G. H. Fowles, R. Tindle, E. H. Covell, E. D. Butler, A. Braudrick, L. Proudfoot, W. H. Stone, June 11th; E. E. Crosby, S. F. Legge, F. A. Ledgard, A. V. Raymond, L. C. Wraight, A. H. Williams, R. E Goodfellow, A. Sculthorpe, R. S. Edwards, June 12th.

Lts (A. and S.) to be Lts. (K.B.) :—C. L. L. C. Brock, G. B. Ash, May 10th.

Sec. Lts. (late Gen List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (K.B.) :—J. A. Beard, W. Dowling, J. S. Machin, T. S. Mobey, May 10th; J. W. A Legge-Willis, F. W. Osman, June 1st; T. M. Barllett, F. M Hawthorn, L. P. Jackson, H. G. Mackay, June 15th; G. H. L. Robertson, H. W. Robinson, July 1st.

The follg. are granted temp. commns. as 2nd Lts. (K.B.) :—P. S. Page, M.C. (temp. Capt., R. Fus.), and to be Hon. Capt., J. E. Edwards, M.C. (temp Lt. Welsh R.), and to be Hon. Lt., A Hanson (temp. Lt., York and Lanc R.), and to be Hon. Lt., J S. Hunter (Lt., Lond. R., T.F.), and to be Hon. Lt., N. H. N. MacLeod (temp. Lt., R. Sc. Fus.), and to be Hon. Lt., A. A. Robinson, M.C (2nd Lt., K. L'pool R.), May 10th, W. O. Ford (temp. Lt., Shops. L.I.), and to be Hon. Lt., G. F. A. Lewin, M.C (Lt., Suff. R., Spec. Res.), and to be Hon. Lt., I. P. Venner (temp. Lt., R.E.), and to be Hon. Lt., June 1st; H. A. Porter (Capt., R.G.A., T.F.), and to be Hon Capt , E. St. H. Davies (temp. Lt., R. Suss. R), and to be Hon. Lt., H. E. R. Ford, M.C. (temp. Lt., R.W. Fus.), and to be Hon. Lt., F. C. Giles (temp. Lt., Middx. R.), and to be Hon. Lt., S. G. Manders (Lt., R. W. Fus.), and to be Hon. Lt., H. F. Sampson (temp. Lt., Bord. R.), and to be Hon. Lt., C. Trenchard (Lt., Som. L.I., T.F.), and to be Hon. Lt., J. M. Ballard (Sec. Lt., R.F.A., Spec. Res.), E. A. Bingen (Sec. Lt., R. Suss. R., T.F.), June 15th; B. G. Nichols (Lt., R.F.A., T.F.), and to be Hon. Lt., K. T. Kirkby (Sec. Lt., R.F.A., Spec. Res.), F. W. Palmer, V.C., M.M. (temp. Sec. Lt., R. Fus.), July 1st

Sec. Lts. (late Gen. List, R.F.C., on prob) are confirmed in their rank as Sec. Lts , Obsr. Officers :—E. G. Emery, T. L. James, J. W. Hogan, Geo. Williams, May 26th; N. C. Macdonald, E. G. T. Chubb, May 28th; R. H. Trelease, T. B. Lowton, June 22nd; C. K. David, June 25th; B. Johnson, A. B. Fee, June 26th; C. B. Edwards, July 2nd; D. H. Murray, July 4th; J. J. Rowe, L. E. Mitchell, E. P. Collingburn, C. H. Cutting, W. Smith, E. A. Shearing, C. R. French, July 6th; P. R, Pierce, July 9th.

The follg. are granted temp. commns as Sec. Lts. Obsr. Officers :—H. Bates (Prob. Flt. Officers, late R.N.A.S.), April 1st; F. H. Webb, M.M. (temp. Sec. Lt., R. War. R.), May 18th; W. Mellor (Sec. Lt., W. York R., T.F.), May 26th; J. R. Jackman (Lt., W. Rid. R., T.F.), and to be Hon. Lt., H. Tasker (Sec Lt., W. York R., T.F.), May 28th; J. M. Mackie (Lt., Manitoba R., C.E.F.), and to be Hon. Lt., June 9th; C. M. McGorrery (temp. Lt., A.S.C.), and to be Hon. Lt., June 17th; S. Hodgson (Sec. Lt., Suff. R., Spec. Res.), A. C. Guthrie (temp. Sec. Lt., R.E.), A. B. Dewbury (Lt., C.F.A., C.E.F.), and to be Hon. Lt., J. M. G. Bell, M.C. (temp. Lt., R.F.A.), and to be Hon. Lt., A. Westall (Lt., Manch. R., T.F.), and to be Hon. Lt., F. J. Rogers (Lt., Middx. R., Spec. Res.), and to be Hon. Lt., T. H. Holmes (Sec. Lt., R.F.A.), F. A. D. Vaughan (Sec. Lt., R. Fus., Spec. Res.), W. G. Greenaway, M.C. (Sec. Lt., R. Ir Fus.), H. P. Elliott (temp. Sec. Lt., Devon R.), June 22nd; E. Hamilton (Lt., S. Ir. Horse Cav., Spec. Res.), and to be Hon. Lt., June 23rd; J. D Thomson (Capt., Can. A.P.C., C.E.F.), and to be Hon. Capt., L. C. Baker (temp Sec. Lt , R.W. Kent R.), D. W. Stewart (Lt., W. Ont. R., C.E.F.), and to be Hon. Lt. (June 25th; A. R. Butler (temp. Sec. Lt., R.E.), H. C. T. Gompertz (Sec. Lt., R.F.A., Spec. Res.), June 26th; E. A. Simpson (temp. Sec. Lt., R. Ir. Fus.), July 2nd; G. Graham-Green (temp. Sec. Lt., Northd. R.), R. J. Hook, D.F.C. (temp. Sec. Lt., Rif. Brig.), P. Allsopp (Sec. Lt., W. Rid. R., T.F.), W. W. Sproson (temp. Lt., Lan. Fus.), and to be Hon. Lt., July 4th; A. G. Hilton (Sec. Lt., Manch. R., T.F.), A. Benblestein (temp. Sec. Lt., S.A.H.A.), E. Hill (Lt., Cent. Ont R., C.E.F.), and to be Hon. Lt., J. N. Hawthorne (temp. Sec. Lt., Northn. R.), R. M. Williams (temp. Lt., attd. R.W. Fus.), and to be Hon. Lt., G. H. Gillis (Capt., Can. A.P.C., C.E.F.), and to be Hon. Capt , G. H. P. Whitfield, M.C. (Lt., R. Ir. Rif), and to be Hon. Lt., J. L. C. Sutherland, M.C. (Lt., R.W. Kent R.), and to be Hon. Lt., B. Archer (temp. Sec. Lt., Northn. R.), A. B. Bedford (Sec. Lt., Leic. R., T.F.), W. L. Bing (temp. Sec. Lt., E. Kent R.), J. Hackett (temp. Sec. Lt., Worc. R.), G. K. Hodgetts (temp. Sec Lt., R. War. R.), B. C. Pearson (temp. Sec. Lt., Yorks L.I.), V. S. Gray (Sec. Lt , Suff. R., T.F.), G. Best (Lt., Glouc. R., T.F.) and to be Hon. Lt., A. Dewhirst (temp. Sec. Lt., W. York R.), July 6th; E. Bottrill (Lt., Cent. Ont., C.E.F.) and to be Hon. Lt., July 8th; J. Hinchey (temp. Sec. Lt., attd. W. Rid. R.), W. A. Hammond (Sec. Lt., W. Rid. R., T.F.), July 9th; B. F. Deane (Lt., R. Suss. R., T.F.) and to be Hon. Lt., F. Fletcher (Sec. Lt., R.A.F., Spec. Res.), H. C. G. Newton, M.C (temp. Lt., R.E.) and to be Hon. Lt., A. C. J. Payne, M.M. (temp. Sec. Lt., R.W. Kent R.), W. G. Shedel (Lt., R. Fus., Spec. Res.) and to be Hon. Lt., J. R. Williams (Sec. Lt., R. W. Fus., T.F.), July 13th; A. W. Wyncoll (Sec. Lt., R. Lan. R.), July 14th.

Flt. Cadets are granted temp. commns. as Sec Lts., Obsr. Officers :—C. W. Somerville, B. Hickman, W. V. Wood, B. Sayers, T. H. Seymour, F. H. Lythall, P. Robertson, June 22nd; J. K Best, W. W. Bradford, A. B. Rattray, July 5th; A. M. Adam, D. A. Alexander, J. B. Blundell, W. J. Bradshaw, G. Butters, J. C. Cavanagh, L. D. Churchill, T. B. Collis, W. A. Smith, J. H. Thomson, J. V. Lee, W. E. Jackson, H. Edwards, W. R. T. Chamberlain, C. Hancock, F. J. Gallant, July 6th; W. Moorhouse, M. A. Dunn, N. Wallace, C. G. Hitchcock July 11th; J. R. W. Admason, G. Bradbury, E. Brandon, W. J. Carruthers, W. E. China, N. J. Dalgleish, S. H. J. Garne, G. H. Haslam, J. S. Hasdell, B. R. Jones, R. H. Nicholls, G. A. F. Prentice, J. A. Pearson, F. S. Smith, W C. Saville, T. Stockdale, E. M. Buckley, J. Andrews, E. Calvert, A. H. Fuller, R. H. S. Grundy, B. G Shum, July 13th.

Lt. M. K. Jones relinquishes his commn. on ceasing to be empld., July 10th.

Lt. E. L. Burrell relinquishes his commn. on account of ill-health, and is granted hon. rank of Lt., July 17th.

Sec. Lts. relinquish their commns., having been found permanently unfit Pilots or Obsrs. :—A. W. McDonald, K. J. H. Lane, J. G. Proger, C. L. H. Johnson, July 17th.

ADMINISTRATIVE BRANCH.—Capt. A. G. Wright to be temp Maj. while empld. as Maj., April 1st.

To be temp. Capts. while empld. as Capts. :—Sec. Lt (Hon. Lt.) C. H. Tancred, May 18th; Lt. J. R. Nicholls, May 31st; Lt. (Hon. Capt.) O. S. Shirriff to be Lt., from (A. and S.), July 5th.

Sec. Lts. resign their commns. :—H. J. Winter, V. S. Sweetman, July 17th.

Surname of Lt P. Sormani is as now described, and not as in "Gazette" of June 25th.

TECHNICAL BRANCH.—The follg. are granted temp. commns. as Capts. :—J. Lanning (Lt., R.N.V.R.), April 3rd; F. McG. Davies (Capt., Saskatchewan R., C.E.F.), June 7th.

M. Heckstall-Smith (Lt., R.N.V.R.) is granted a temp. commn. as Capt. April 1st, and to be temp. Maj. while specially empld., June 19th.

Capt. K. R. Paterson to be Capt., from (A. and S.), May 7th.

Lt. (Hon. Capt.) I. P. Millar to be Sec. Lt. (Hon. Capt.), from (A. and S.), April 10th.

Capts relinquish their commns. on account of ill-health, and are granted hon. rank of Capt. :—D. F. H. FitzMaurice, A. B. Wheldon, July 17th.

Sec. Lt. (Hon. Lt.) F. E. Bray relinquishes his commn. on account of ill-health contracted on active service, and retains his hon. rank, July 17th.

MEDICAL BRANCH.—C. S. Dowdell is granted temp. commn. as Capt. (June 10th), and not Lt. as stated in "Gazette" June 11th.

Lt. N. F. Stallard to be Capt., July 4th.

MEMORANDUM.—Sec. Lt. O. E. Fleming to take rank and prec. as if his appt. as Sec. Lt. bore date March 19th

WAR OFFICE, July 18th.

With reference to the awards conferred as announced in the "London Gazette," dated February 18th, 1918, the following are the statements of service for which the decorations were conferred :—

DISTINGUISHED SERVICE ORDER.

Temp Capt. W. G. BARKER, M.C., Gen. List and R.F.C.

When on scouting and patrol work he has on five different occasions brought down and destroyed five enemy aeroplanes and two balloons,

though on two of these occasions he was attacked by superior numbers. On each occasion the hostile machines were observed to crash to earth, the wreckage bursting into flames. His splendid example of fearlessness and magnificent leadership have been of inestimable value to his squadron.

CANADIAN FORCE.

Maj. A. D. CARTER, Infy. and R.F.C.

He destroyed two enemy aeroplanes, drove down several others out of control, and on two occasions attacked enemy troops from a low altitude. He showed great keenness and dash as a patrol leader.

A BAR TO THE DISTINGUISHED SERVICE ORDER.

Sec Lt. (temp. Capt.) J. B. MCCUDDEN, D.S.O., M.C., Gen. List and R.F.C.

He attacked enemy formations, both when leading his patrol and single-handed. By his fearlessness and clever manœuvring he has brought down 31 enemy machines, 10 of which have fallen in our lines. His pluck and determination have had a marked effect on the efficiency of the squadron.

THE MILITARY CROSS.

Sec. Lt. A. C. B. HARRISON, O. and B. L.I. and R.F.C.

He carried out two very successful long-distance photographic reconnaissances under most difficult weather conditions. On one occasion, while on a patrol he was attacked by two enemy aeroplanes; he drove one of them down in a damaged condition and completed his reconnaissance. He has taken part in many bombing raids and photographic reconnaissances, and has set a most valuable example of consistent courage and determination to his squadron.

Temp. Sec. Lt. (temp. Capt.) N. MACMILLAN, Gen. List and R.F.C.

He has shot down in flames three enemy planes, and has driven down out of control six other machines. He has by his skill and courage afforded a magnificent example to all ranks with whom he has come into contact.

Lt. (temp. Capt.) J. MITCHELL, R.F.C., Spec. Res.

When on patrol work on four separate occasions he has shot down five enemy planes, three of which were observed to burst into flames, one being a large three-seater. On two of these occasions his formation was attacked by superior formations of the enemy. His magnificent work has been marked by great dash and fearlessness.

Temp. Sec. Lt. K. B. MONTGOMERY, Gen. List and R.F.C.

He has on several occasions, during a period of three months, shot down in flames four hostile machines, three of which were large high-powered two-seaters, and has driven down out of control six enemy planes. He is a most determined scout pilot, his skill and courage being of a very high order.

Capt. L. G. S. PAYNE, Suff. R. and R.F.C.

On four occasions he bombed important enemy railway stations, obtaining direct hits on each occasion. He also carried out a long-distance raid on an enemy aerodrome, which he bombed from 1,100 feet, making the return journey at a height of 800 feet with his machine damaged. He has taken part in many night bombing raids, always at a low altitude, and has set a fine example of determination to all ranks of his squadron.

Temp. Sec. Lt. F. G. QUIGLEY, Gen. List and R.F.C.

For conspicuous gallantry and devotion to duty when engaging hostile aircraft. On one occasion, while on patrol, he attacked an enemy two-seater, which, after close fighting and skilful manœuvring, he crashed to the ground. He has within a short period destroyed, or driven down out of control, seven other enemy machines, and on all occasions has displayed high courage and a fine fighting spirit.

Sec. Lt. (temp. Capt.) H. A. SMITH, Middx. R. and R.F.C.

On five separate occasions during raids on points beyond the enemy lines he has found his objectives, although on more than one occasion he was badly hampered by adverse conditions. He drove down one enemy plane out of control and engaged two others with indecisive results owing to the clouds. He has taken part in many bombing raids and his example of energy and determination has been of the utmost value to his squadron.

Lt. (temp. Capt.) G. T. WILLCOX, High. L.I. and R.F.C.

On five occasions he carried out bombing raids at a low altitude on important enemy railway stations, aerodromes, and other targets, obtaining direct hits on each occasion He has set a very fine example to his squadron by his gallantry and determination.

AUSTRALIAN IMPERIAL FORCE.

Lt. L. W. SUTHERLAND, F.C.

He continually carried out difficult reconnaissances and brought in most valuable reports though he was often attacked by hostile aeroplanes. He showed the greatest initiative and determination.

A BAR TO THE MILITARY CROSS.

Sec Lt (temp. Capt.) C. A. STEVENS, M.C., W. Rid. R. and R.F.C.

For conspicuous gallantry and devotion to duty as a leader of numerous bombing raids. On one occasion he led ten machines a distance of 130 miles from his aerodrome, obtaining good results. During all the raids in which he has acted as leader he has lost only one machine, and he has invariably given a splendid example of skill and courage. His skill and determination have had an admirable influence in his squadron.

Lt F. A. BATES, Yeo. and R.F.C.

He flew over an enemy battery which was firing on our positions, dived on to it and silenced it with his machine guns. He showed splendid courage and resource

Temp. Lt (temp. Capt.) J. C. B. FIRTH, Gen List and R.F.C.

He has on various occasions, during a period of two months, completely destroyed two enemy planes and shot down out of control seven others. The latter, by reason of the manner in which they were observed to go to earth, were probably all rendered useless for further service. He has set a very fine example as a patrol leader, and has displayed much skill and courage.

WAR OFFICE, July 19th.

REGULAR FORCES. — ESTABLISHMENTS. — R.F.C.—MIL. WING.—Flt. Comdr.—Capt. H. W. Kingdon, Hamps. R., T.F., from a Flying Officer, Jan. 20th.

Adjt.—Capt. P. Musker, Yeo., T.F., March 6th

Special Appts.—(Graded as Park Comdrs.)—And to be temp. Majors whilst so empld.:—Capt. C. E. Prince, Yeo., T.F., from an Experimental Officer, 1st Cl. (graded as an Equipt. Officer, 1st Cl.): Lt. (temp. Capt.) G. Jacques, Spec. Res., from an Equipt. Officer, 1st Cl., Dec. 14th, 1917.

SCHOOLS OF INSTRN.—SCHOOLS OF MIL. AERONAUTICS.—Asst. Instr.—(Graded as an Equipt. Officer, 2nd Cl.)—Temp. Lt H. D. Legge, Gen. List, an Equipt. Officer, 3rd Cl., Sept. 4th, 1917.

Gen. List.—To be temp. Sec. Lts.:—Flt. Staff Serjt. C. T. Skipper, from R.F.C., Feb. 20th.

AIR MINISTRY, July 19th.

R.A.F.—The follg. temp. appt. is make at the Air Ministry:—Staff Officer, 2nd. Cl.—(Air) Capt. (temp. Maj.) H. G. G. Viscount Tiverton, and to retain his temp. rank whilst so empld., April 15th; (Q.) P. Gadsby (Asst. Commy. of Ordnance and Hon. Capt., A.O.D.) is granted a temp. commn. as Capt., and to be temp. Maj. whilst so empld., vice Lt. (temp Maj.) L. O. S. Reynolds, June 25th; Capt. (temp. Maj.) W. J. Polyblank relinquishes the appt. of Staff Officer, 2nd Cl., July 1st.

The follg. temp. appts. are made:—Group Comdr.—Maj. (temp. Lt.-Col.) J. C. Halahan, and to be temp. Col. whilst so empld., June 1st.

Staff Officers, 1st Cl.—And to be temp. Lt.-Cols. whilst so empld.:—Maj. E. G. Mackenzie, May 21st; Maj. R. Money, June 1st; Lt. (temp. Maj.) F. G. D. Hards, D.S.C., June 27th; the date of appt. of Lt.-Col. (Hon. Col.) L. Munro is April 2nd, and not as in "Gazette" of May 3rd.

Staff Officers, 2nd Cl.—And to be temp. Majs. whilst so empld., if not already holding that rank:—Capt. (temp. Maj.) H. F. A. Gordon, May 9th; (T.) Lt. (temp. Capt.) F. J. Baker, May 13th; Maj. A. Gray, May 20th; Capt. F. W. J. V. Frazer, M.C., June 1st; F. E. B. Whitfield (Capt., Welsh R., Spec. Res.), and is granted a temp commn. as Capt., June 1st; Lt. (temp. Capt.) R. McPhail, June 17th.

Staff Officers, 3rd Cl.—And to be temp. Capts. while so empld., if not already holding that rank:—Sec. Lt. (Hon. Lt.) F. McGuffie, May 17th; Capt. C. E. Dalton, Lt. (temp. Capt.) J. A. Middleton, M.C., June 1st; Capt. C. J. Page, June 6th; Lt. B. K. O. Mathews, June 18th; Capt. W. Astell, Lt. (temp. Capt.) C. A. Brewster-Joske, M.C., June 23rd; (T.) Lt. A. W. Chapman, May 14th; (Q.) Lt. (temp. Capt.) G. R. L. Sweet, May 21st; (S.) Lt. (temp. Capt.) H. J. Lister, May 24th; Sec. Lt. (temp. Lt.) H. J. Taplin, June 13th The rank of Capt. L. Henshall is as now described, and not as in "Gazette," June 25th.

FLYING BRANCH.—The notification in "Gazette," May 14th, regarding Maj. (temp. Lt.-Col.) A. C. Barnby is cancelled

The following Lts. (temp. Capts.) to be temp Majs. while empld. as Majs., A. and S.:—C. H. Darley, D.S.C., July 11th; W. E. Gardiner, D.S.C., July 15th.

Lts. to be temp. Capts. while empld. as Capts., A. and S.:—G. G. Bell, June 13th; A. E. Ellis, R. J. Gammon, (Hon. Capt.) O. C. W. Johnsen, R. F. Palmer, June 27th; E. R. H Beaman, June 30th; P. Ainsworth, L. H Browning, D Colyer, L. Clarke, S. E. Faber, W. S. Reid, A. O. K. Wright, L. H L. Lindsay-Young, July 1st; H. A. R. Biziou, July 2nd; L. R. Warren, R. Stephenson, July 4th; E. G. Bannister, July 6th; J. R. Hopkins, July 10th.

Lt G. E. Randall to be Lt., A. and S. from (O.), May 20th.

Lts to be Lts., A. and S., from (O.):—J. T. G. Murison, May 31st; H. E. Austin, June 1st; L. B. Wallas, June 15th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts., A. and S.:—G. R. Pringle, April 26th; S. H. Whipple, April 29th; R. F. Ralph, May 5th; D. M. Galloway, May 16th; A. B. Wilkinson, W. L. Brookes, May 20th; L. G. Lucas, May 27th; R. H. Gray, May 28th; S. E. Moss, May 29th; W. R. Hall, May 31st; L. G. W. Howles, June 1st; S. T. C. Roberts, R. A. P. Johnson, June 2nd; J. E. Phelps, June 3rd; G. A. Brown, J. H. Sims, June 4th; W. T. Jones, E. C. Clarke, P. J. Shaw, June 5th; H. E. Twaits, H. F. Turner N. H. Marshall, June 6th; F. L. Wraight, G. Lovett, June 7th; G. E. T Payne, W. A Rollason, W. L. Stebbins, A. R. McFarlan, L. G. Tearle, C. E. Sunnucks, P. J. Baker, C. N. James. June 8th; H. G. Higgins, June 9th; R. M Miller, J. Horrocks, A. R. Bell, G. A. Harris, D. G. Higgins, June 11th; R. N. Bell, G W. Chew, E. Wilman, G. T. Litherland, T. Nolan, R. R. Nelson, June 12th; T. E. Roach, E. A. Brownhill, J. S. Walker, L. D. Lyon, W. S Emmott, R. F. Lynch, A. Tyler, H. J. Fuller, R. S. Johnston, C. E. Thorpe, A. G. Ely, June 13th; L. Dexter, A. E. Watson, C. M. Barter, J. Macintyre, H. Kershaw, W. A. Harris, L. Mantegazza, T. M. Steele, H. E. Grove, F. J. Tilley, June 14th; P. V. Penhallyrick, J. L. Colbourne, June 15th; N. Little, June 17th.

The follg. are granted temp. commns. as Sec. Lts., A. and S.:—F. S. Williams (Lt., Mon. R., T.F.), and to be Hon. Lt., May 18th; G. H. Hunt (Lt., Sask. R., C.E.F.), and to be Hon. Lt., May 31st; W. Ashford (temp. Sec. Lt., attd. R. W. Surr. R.), June 1st; H. J. Buist (temp. Lt., R. W. Surr. R.), and to be Hon. Lt., June 3rd; A. J Hannah (temp. Sec. Lt., High. L.I., Spec Res.), C. O'Connell, M.C. (Sec. Lt., Lond. R., T.F.), J. Blackford (temp. Lt., M.G. Corps), and to be Hon. Lt., June 6th; R. T. Worrall (Sec. Lt., R.F.A., Spec. Res.), June 10th; J. F. Foster (Lt., Bord. R., T.F.), and to be Hon. Lt., A. Heritage (Sec. Lt., Lond. R., T.F.), L. A. W. Knight (Lt., Worc. R.), and to be Hon. Lt., E. A. White, D.C.M. (Lt., Manitoba R., C.E.F.), and to be Hon. Lt., D. M. Berry (temp. Capt., attd. R. Fus.), and to be Hon. Capt., June 11th; E. Hodgson (Lt., K. Lpool. R., Spec. Res.), and to be Hon. Lt., G. H. Macaskill (Sec. Lt., Essex R.), J. D. Irvine (temp. Sec. Lt., R. Scots), G. E. Manning, M.C. (temp. Lt., E. Surr. R.), and to be Hon. Lt., A. S. Moyniham (Sec. Lt., R.F.A.), S. R. Grover (Lt., Gordon Highrs., Spec. Res.), and to be Hon. Lt., June 12th; W. E. Whitton (Lt., Lpool. R.), and to be Hon. Lt. F. H. Moore (temp. Lt., attd. R. W. Surr. R.), and to be Hon. Lt., June 13th; A. W. Beamand (temp. Capt., A.S.C.), and to be Hon. Capt., June 14th.

Lt. (Obsr. Officer) C. H. Trotter to be Lt. (A. and S.), June 23rd.

H. S. Gros (Lt., Manch. R.) is granted a temp commn. as Sec Lt. (O.), and to be Hon. Lt., April 14th

Flt. Cadets are granted temp. commns. as Sec. Lts. (A. and S.):—G. R. Marsh, F. W. Fryer, A. F. Webster, J. R. A. Savidge, C. Kirkwood, June 12th.

Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (A. and S.):—W. S. Hancy, H. F. Farncourt, June 5th.

The notification in "Gazette" dated July 5th with reference to E. Nordberg is cancelled.

Sec. Lts. (late Gen List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (Obsr. Officers):—W. Jacklin, May 25th; J. Tullock, May 26th; B. T. Gillman, L. Sharp, May 29th; G. W. Lambert, June 1st; R. K. Pollard, June 7th; S. R. Payne, June 9th; H. Thompson, June 10th; F. W. Chester, J. MacD. MacKinnon, June 11th; E. M. Nicholas, June 12th; W. H. A. Rickett, June 16th; J. Forsyth, June 21st; C. G. Smith, June 30th; R. V. Hepburn, July 1st; H. R. Owen, J. C. Sanders, H. Rapier, July 3rd.

Flt Cadets are granted temp. commns. as Sec. Lts., Obsr. Officers:—D. E. Haighton, July 5th; J. H Cooke, C. H Ford, R. E. E. Hasell, G. R. Howard, B. P Kenkins, H. B Shaw, T. Brown, D. E. Chase, G. H. Wilson, N. P. Wood, W. H. Telfer, D. S Hamilton, H. Roberts, J. Skidmore, H. Lawrence, A. B. Sangster, July 6th; F. W. Woolley, July 8th; H. Ridley, C. A. Atkins, J Churchill, E. G. Cook, L. G. Cooper, D Davenport, F. G. Davies, A. A. Douglas, S. L. Dunlop, F. C. B. Eaton, E. H. Edgell, J. W. Jones, W. R. Sellar, P. Willis, G. L. P. Drummond, L. J. Edwardes, July 10th; H. W. Hopton, A. D. Hollingworth, May 18th; C. Gardner, A. C. Garwood, W. A. Creig, D. B. Hallie, W. W. Harrison, J. D. Hall, July 13th; F. X. Jackson, J. A. Lee, A. G. McLauchlan, July 17th.

The follg. are granted temp. commns. as Sec. Lts., Obsr. Officers:—J. A. A. Malhiot (Lt., Can. Rly. Services, C.E.F.) and to be hon. Lt., May 26th; G. Webb (temp. Sec. Lt., S. Staff. R., June 4th; V. W. Allen, M.C. (Sec. Lt., S. American Inf.), June 8th; J. M. Hughes (Lt., S. Lan. R.), and to be hon. Lt., June 15th; N. C. K. Auster (temp. Sec. Lt., S. Wales Bord.), June 29th; E. Vickers (Sec. Lt., W. Rid. R.); G. D. Dodds (Lt., Durh. L.I., T.F.), and to be hon. Lt., I. MacL. Moffatt (Sec Lt., R.G.A., Spec. Res.), July 1st; A. E. Ealding (temp. Sec. Lt., Lpool R.), F. C. Smith (temp. Sec. Lt., N. Lan. R.),

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W. T. Rees (Sec. Lt., Dorset R.), F. Godson (Lt, Lincs. Yeo., T.F.), and to be hon. Lt., J. Evans, M.M. (temp. Sec. Lt., E. York. R.), July 3rd.

Capt A. R. Fortin to relinquish his commn. on ceasing to be empld., March 12th.

Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Lts. :—W Gardner, July 6th; L. T. Clemence, Lt. E. A. H. Viscount Exmouth, July 20th.

Administrative Branch.—W. Bindloss (temp. Capt., Lpool R.) is granted a temp. commn. as Lt., and to be hon. Capt., June 14th.

Lt. J. P. Greenwood to be Lt. from(O.).

S. Wyatt (Lt., R.M.L.I.) is granted a temp. commn. as Lt., May 23rd.

The follg. are granted temp. commns. as Sec. Lts. :—E. Powell, July 9th; A. C. E. F. Kennish (late Lt., Oxf. and Bucks L.I.), and to be hon. Lt., July 12th; L. E. S. Barrett, July 16th; E. Codyre (late Capt., Army Pay Dept.), and to be hon. Capt., July 20th.

Sec. Lt. A. C. Blackwell resigns his commn., and is granted the hon. rank of Sec. Lt.; Sec. Lt A. S. M. Law resigns his commn., July 20th.

Technical Branch.—Lt. (hon. Capt.) J. H. Rutherford to be temp. Maj. while empld. as Liaison Officer, July 6th

Sec. Lt. W. H. Lawrence resigns his commn, July 20th

Medical Branch.—The follg. are granted temp. commns. as Capts. :—R. G. Maglione, I. M. Thompson, July 15th; A. H. Todd, July 17th.

The follg. are granted temp. commns. as Lts. :—G. Dunderdale, J. P. Hennessy, July 12th, F. Gill, J. S. Harbinson, G. W. Harbottle, J. J. O'Mullane, M. J. Whelton, July 15th; A. G. Graham, July 18th.

Memoranda.—The date of appt. to a temp. commn. of Lt.-Col. (hon. Col.) Lt. Munro is April 1st, and not as in "Gazette," May 3rd.

Sec. Lt. W. E. T. Williams to take rank and prec. as if his appt. as Sec. Lt. bore date June 3rd.

Sec. Lts. resign their commns. :—W. S. Race, Lt. S. Simons, Lt. C. G. Abell, July 20th.

War Office, July 22nd.

REGULAR FORCES.—Memorandum.—Air Mechanic W. P. Charnley, R.A.F., to be temp. Sec. Lt. for duty with Hiring and Claims Commission, July 23rd.

FROM THE COURT CIRCULAR.

Buckingham Palace, July 16th.

The King, attended by Capt. B. Godfrey-Faussett, R.N., and Lt.-Col. Clive Wigram, inspected No. 1 Balloon Training Wing, R.A.F. this morning.

His Majesty was received by Lt.-Col. John Dunville, R.A.F.

Maj.-Gen. Sir Godfrey Paine, Master-General of Personnel, Air Ministry, and Brig.-Gen. J. G. Hearson, Director of Training, R.A.F., were also in attendance.

Buckingham Palace, July 17th.

The following officers were received by the King, when His Majesty conferred decorations as follows :—

The Military Cross and Bar.—Lt. Cecil Palmer, Lond. Regt., attd. R.A.F

The Military Cross.—Maj. Harry Smith, R.A.F.; Capt. Arthur Fairclough, Canadian M.G.C. and R.A.F.; Capt Warren Carey-Thomas, R.A.F.; Lt. William Baillie, R.A.F.; Lt. Arthur Britton, R.A.F.; Lt. Claude Hawker, R.A.F.; Lt. William McLean, R.A.F.; Lt. Walbanke Pritt, R.A.F.; Sec. Lt. Reginald Griffiths, Welsh Regt., attd. R.A.F.

OFFICIAL COMMUNIQUES.

NAVAL.

Admiralty Communiqués.

July 18th.—During the period July 11th-17th inclusive, Royal Air Force units working with the Navy in home waters have maintained anti-submarine and escort patrols.

Bombing raids have been carried out, when weather was favourable, with good results. Enemy destroyers have been sighted off the Flanders coast on several occasions and attacked with bombs. A direct hit was obtained on one large destroyer. Our formations have also attacked destroyers with machine-gun fire. On one of these occasions five enemy seaplanes approached at beginning of action, but immediately withdrew.

Enemy aircraft have been active and have attacked our bombing and patrol formations Three hostile machines have been destroyed and four driven down out of control. Two of our machines are missing and two collided and crashed. One of our machines on anti-submarine patrol observed an enemy seaplane upside down in the sea, no occupants.

Enemy attempts to salve the torpedo-boat destroyer recently sunk close to Zeebrugge by a bomb from one of our machines have been greatly hindered by our bombing formations

July 20th.—A detachment of the Grand Fleet operating off the Jutland coast on the morning of Friday, July 19th, has now returned to the base, having carried out a bombing attack on the Zeppelin sheds at Tondern, Schleswig, by Royal Air Force machines dispatched from the vessels

In the first flight, which was made in the early morning, all machines reached their objective, and made direct hits on a large double shed, which was completely destroyed, the conflagration rising to 1,000 ft.

A second flight followed the first, all machines but one reaching their objective. A large shed was observed to have a hole of considerable dimensions in the roof, from which a volume of smoke was being emitted. A second shed was bombed, and direct hits were made, but owing to fierce anti-aircraft fire and to the smoke of the first shed it was not possible to observe whether destruction of the second shed was complete. The attacks were made from a height of 700 ft. to 1,000 ft.

Four of our machines failed to return, and information has been received that three of these machines landed in Danish territory.

All ships returned without any casualties.

MILITARY.

G.H.Q. Communiqués.

July 16th, 8.12 p.m.—On the 15th inst., storms again handicapped work in the air. Our machines dropped a few bombs and kept the front under observation

Six hostile machines were brought down by us.

One of our machines is missing.

A violent thunderstorm prevented night bombing after midnight. Prior to this hour over four tons of bombs were dropped on Seclin railway station (south of Lille), and on hostile billets.

All machines returned.

July 17th, 8.37 p.m.—On the 16th repeated thunder and rain storms prevented continuous aerial work. Our aeroplanes took advantage of fine intervals to carry out reconnaissances, work with the artillery, and bombing

Thirteen tons of bombs were dropped on hostile aerodromes, ammunition dumps, the Mole at Zeebrugge, and villages used by the enemy as billets—among them Estaires and Merville.

Ten enemy machines were brought down in air fighting and four others were driven down out of control. In addition, six hostile balloons were shot down in flames.

Nine of our machines are missing.

After dark, in spite of bad weather, our aeroplanes dropped over 500 bombs on the railway junctions at Seclin and on various billets.

All the machines engaged on this work returned.

One of the enemy's large bombing machines came down behind our lines.

July 18th, 8.10 p.m.—On the 17th instant the weather was cloudy at first, but improved later, allowing a considerable amount of aerial reconnaissance, photography, and artillery work to be accomplished by us. Eleven and a half tons of bombs were dropped during the day on enemy dumps and railways and on the Brugeoise Works.

Comparatively few enemy machines were encountered. We shot down three and drove one down out of control.

We lost one machine.

We also shot down six hostile balloons in flames.

Severe thunderstorms prevented our machines from carrying out night bombing.

July 19th, 8.5 p.m.—On the 18th inst., in spite of very changeable weather, a good deal of work was accomplished by our aeroplanes both in reconnaissance photography and bombing.

Much of the bombing was done from a low height, the targets including ammunition dumps around Armentières and Méricourt, the railway stations at Rosières and Bray, and the docks at Bruges and Ostend.

Eight hostile machines were brought down in fighting, and one other was shot down by our anti-aircraft fire.

Seven of our machines are missing.

During the night our bombing machines dropped eight tons of bombs on the Mons-Valenciennes railway, and an additional six tons on the railways at Courtrai, Seclin, and Lille

Two of our machines failed to return

July 20th, 8.40 p.m.—Early on the 19th inst several long reconnaissances were carried out by us, and many photographs taken of the enemy's back area. Work with the artillery and bombing were continued throughout the day.

Over 17 tons of bombs were dropped on hostile ammunition dumps, railway stations, and aerodromes In one of the raids on a hostile aerodrome the machines dropped their bombs from between 100 and 500 ft. One pilot landed on the aerodrome and swept the hangars with his machine-guns before rising again.

Ten hostile machines and six balloons were brought down.

Seven of our machines are missing.

After dark, although there was a strong west wind blowing and low clouds continually drifting up, our machines dropped 14 tons of bombs on the railways between Mons and Valenciennes and on the stations at Cambrai, Lille, and Seclin, a direct hit being obtained on a train at the last-named place.

All machines returned.

July 21st, 7.45 p.m.—On the 20th inst., except in the early morning, the weather was again unsuitable for photography and long-distance reconnaissances. It did not prevent our aeroplanes from bombing or from carrying out close reconnaissance and observation for the artillery throughout the day.

Eighteen tons of bombs were dropped by us on different targets, including Courtrai and Lille railways, Bruges docks, three large ammunition dumps, and hostile billets on various parts of the front.

Slightly more fighting took place than on the previous day, and 14 enemy machines were brought down. Three other hostile machines were driven down out of control, and three German observation balloons were destroyed.

Seven of our aeroplanes are missing.

July 22nd, 8.30 p.m.—On the 21st inst. the very strong west wind and low clouds almost entirely prevented flying, except on a small part of the front. Machines in this sector dropped bombs on various targets, including a railway station, where a direct hit was obtained on an ammunition train.

In combats, five hostile machines were brought down.

Four of our machines are missing.

After dark the sky cleared and the wind dropped considerably, enabling our night bombing machines to carry out raids on the greater part of the front. Thirteen tons of bombs were dropped on the railways at Seclin, Menin, Lille, and Cambrai.

One machine has not returned.

War Office Communiqués.

July 16th.—The G.O.C. Italy reports :—

The weather recently has been good, and our aerial activity has consequently increased. Between July 4th and 15th inclusive, our Royal Air Force have destroyed 35 enemy aircraft

One of our aeroplanes has failed to return

July 18th.—The G.O.C. Palestine reports :—

On July 15th and 16th effective bombing raids were carried out against El Kutrani railway station and Amman station respectively, troop trains, camps, and enemy aerodromes being hit and ground targets engaged with machine-gun fire.

July 19th.—The G.O.C. Macedonia reports :—

During the past 10 days three enemy aeroplanes have been destroyed and three driven down out of control.

July 21st.—The G.O.C. Italy reports :—

Two more enemy aircraft should be added to the number destroyed in my last report.

Since the 16th inst. 17 more enemy aircraft have been destroyed by the Royal Air Force with no loss to ourselves.

Home Command Communiqués.

July 18th, 7 p.m.—A hostile aeroplane flying at a great altitude appeared over Thanet about 6.30 p.m. Fire was opened on the machine, which at once turned east and proceeded to sea.

July 20th, 10.30 p.m.—A hostile aeroplane flying at a great altitude crossed the Kentish coast at 9.25 a.m.

On fire being opened the machine at once turned eastward and proceeded to sea.

AIR FORCE.

Air Ministry Communiqués.

The following dispatches have been received from Headquarters of the Royal Air Force Independent Force in France :—

July 16th.—On the 15th inst. the railway sidings and sheds at Offenburg, and a hostile aerodrome, were successfully bombed, good bursts being observed.

(*Continued on page 333.*)

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EDWIN CAMPBELL in *The Graphic*. 15/6/18.

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REPETITION METHODS IN AEROPLANE WOODWORK.

The writer of the present article is a specialist on all classes of toymaking, having had experience in German factories, and shows how it is possible to speed up the manufacture of aeroplane parts by the adaptation of repetition machinery and progressive methods.

In view of the fact that the whole of the State-aided Toy Industries of Germany are now engaged on the manufacture of aeroplane parts, it would be interesting to manufacturers, and wise on the part of our Government, to inquire into what way it would be possible for our own toy industries to assist in the output of this important fighting factor.

The writer has, since the commencement of the war, pointed out to the embro toy maker that the Continental plant for the repetition manufacture of wood toys did not, as was generally imagined, consist of a couple of second-hand saw benches, a band-saw, and a planing machine.

The German Way.

The machinery installed in an up-to-date German toy factory is infinitely superior to that found in the best cabinet-making factories in England to-day. In the manufacture of every kind of building-brick and picture cube, planing machines of the four-cutter type are installed. Special small planers are used for light work, and are exceedingly simple and accurate. They have always been operated by female labour.

Supplementary to the ordinary plant demanded by woodworkers, a host of labour-saving jigs are used for executing special work, and turn the jobs out quicker and cheaper.

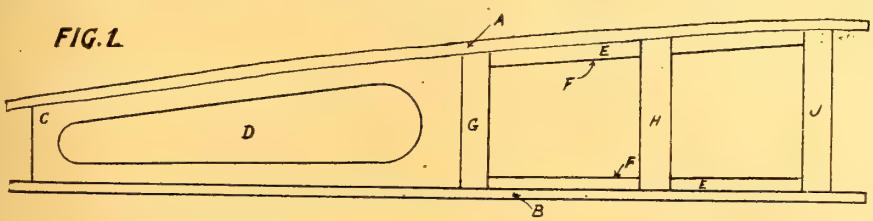
These jigs are a universal asset to the Continental firms, and are seen at their best when employed in the making of such toys as educational and constructional models, interlocking toys, etc. These toys call for exceptional accuracy, and obviously cannot be manufactured, even in small quantities, by anything but up-to-date repetition plant.

The English Way.

Since the outbreak of war, many factories, some capable of holding two thousand workers, have been built to assist in capturing a slice of Germany's trade, and have been filled with up-to-date machinery and jigs, a greater portion of this being German made and purchased from stock.

Early in the war most of these firms applied for munition

FIG. 1.



work, and were either refused or rewarded with a "wait and see" reply; or, as was in the case in the writer's own experience, advised to correspond with firms already on contract. To-day the situation is still unchanged, and the Toy Trade stands awaiting the call, which will apparently never come.

These Toy Factories possess skilled female labour, some of 15 years' experience, in all branches of the work, both machining and assembling and finishing. They also possess jigs which would enable the work to be executed to standardised limits, and would entirely eliminate a multiplicity of minor operations, necessitating a large amount of female labour requiring to be specially trained for the work.

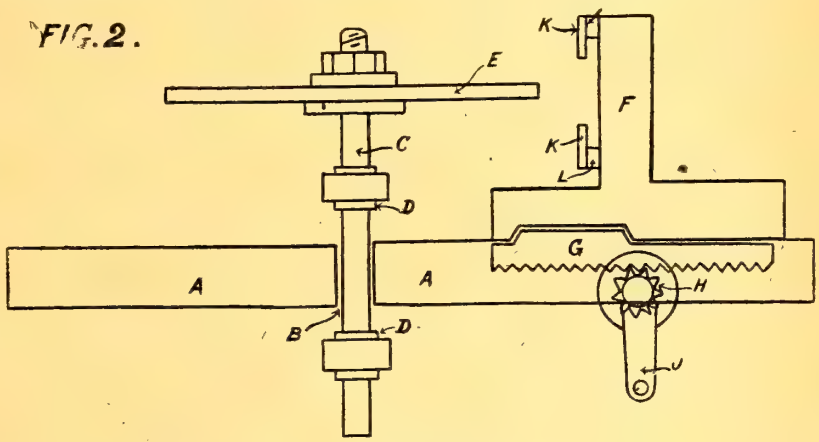
A Case in Point.

The writer has before him a specimen piece which is part of an elevator (Fig. 1). To the aeroplane maker this would appeal in the same manner as the wheels of a toy cart do to the toy maker, they are super-numerous, and, consequently, retard the output of the article, unless special attention is given to the details to enable the output to be increased in ratio to the other parts.

The outer strips A B are grooved on the inside, but the grooves do not extend all the way down the strip. This prevents a repetition process which is known as "passing over the saw," as the recess should extend over all to make it possible.

In Germany, what is known as a Spindle-Slide Jig, is used for "rebating the sides of boxes having bottoms or sliding lids fitted, and also for constructional toys.

FIG. 2.



The jig is a small self-contained one, and readily moved adjacent to a convenient shaft, and driven therefrom. Its cost need only be a slight one, and for accuracy it should be built up from small castings, which can be machined very cheaply by any engineer.

The Jig in Being.

Fig. 2 shows the jig which is made to take strip material of any width up to 4 inches. The base A is made of cast iron, having a central hole B, drilled to take a spindle C. The support for the spindle is usually a lathe-head of the engineering type, a 4-inch centre being sufficient, and it is bolted to the top of a bench leg. The spindle is recessed to allow it to run in the bearings D. The cutter E should be ground with plenty of clearance, and the teeth should also be provided with the necessary clearance. Small circular saws are generally used for the purpose, but the large-toothed cutter wheels, as used on French spindles, are the correct articles to use, provided they are the correct width.

The slide F is made to move backwards and forwards freely, and provided with a stop. The rack G is for propelling the work to and from the cutter, and is actuated by a toothed wheel H, driven by a handle J. The slide-holders KK are moveable, being provided with slots, and nuts and bolts, which are tightened from the back; the distance pieces L are interchangeable to the thickness of the material to be used. The driving pulley is fixed to the bottom end of the spindle.

DOING THE WORK.

The strips may be sawn with a spindle carrying six or eight swage saws, large quantities thus being sawn at once, and cross-cut to length, and passed over a lightening planer. If they are sawn singly from the planed board on a good saw-bench, they do not require planing, but are taken direct to the "Spindle-Slide-Jig."

The strip is inserted between the holders K up to the stop, and the rack G brought towards the cutter. The cutter is revolved and the correct depth and position measured on the strip. When this is once secured the rack handle is removed, for once the machine is set it may remain so, for if the parts are properly standardised the resulting recess will always be in the same position.

The movement is a simple one, *i.e.*, that of putting the strip in the holders, pushing the slide towards the cutter, and a pulling motion towards the operator, and the removal of the strip. This can be performed with greater rapidity even than passing them over a saw-bench.

This slide is universally used in Austria for making the trays in the fancy workboxes, and two makers of machine-tools in Germany supply it for this purpose.

A CHEAP MULTIPLE DRILL.

The drilling is done on separate machines, a jig being bolted down to the table top, and as the pieces are standardised the fit is a positive one.

The drilling may also be done at one stroke of the drill-press, both holes through four thicknesses at one piercing. The writer has described this jig in several of the technical and Toy Trade journals. It will drill any number of holes, in any positions, and can be fixed to any ordinary drilling machine.

It is an arrangement of gears, using the inner diameter of the *driven* gears to accommodate drills of any size. The jig to drill the two holes would not cost more than two pounds, and would be a great time and labour saver.

A GERMAN TOOL.

Herrn Kiesslings, of Frankfort, Germany, manufacture a small bench fretsaw, specially for small internal work. It is inconvenient, costly and slow to use an ordinary Betty, or jig saw, as installed in most cabinet factories and workshops. The fretsaw referred to is exceedingly simple, and is similar in design to the Royal Hobbies fretsaw, but stronger. It is made with a double slide and is cam driven, by power, and has a square tubular frame and quick gripping and releasing jaws.

The machine is stopped and started by a front lever projecting under the table, so that both hands are always free, and the lever moved by the chest or body of the worker. The saws used are the "Blitz" No. 7, which are an imitation of the famous "Star" blades, and though not so swift in cutting are stronger and more durable. The "Star" No. 6 blade is the same as the "Blitz" No. 7 in size.

THE SYSTÈME GLOBALE AGAIN.

The interiors of these parts could be better done by a treadle fretsaw than by the Betty, and the work can be performed by boys or female labour. This, as in the case of Germany's toy-trade, would provide skilled outworkers with remunerative employment at home, and would utilise a class of labour which would not otherwise be actively engaged in the production of any kind of munitions of war.

The idea of sweated labour must, in this case, be placed out of all question. There are thousands of skilled fretworkers possessing treadle machines to whom this would be a boon, and at all events could do the work infinitely better than the samples which the writer has seen from time to time.

MORE DETAILS.

The two strips E are plain except that the edge F is rounded and this should cause no difficulty. The three pieces G H J are different lengths and slotted. They should be kept separate.

The slotting is best done on a small special saw-bench, passing the pieces upright along a pair of guides forcing them over the saw. The cut is then parallel and clean. A quicker method is by means of a small box cutter, which principle will be familiar to those who have used or seen a box-comber or straight dovetailing machine.

A handful of these pieces can be picked up, and fed as quickly as the hand can feed them up to the protected cutter, producing a clean cut, dead accurate, without any variation. The tool could be erected for a few shillings and the proficiency and speed and safety cannot be compared with that of the saw-bench.

ASSEMBLING.

The easiest method of assembling is to build it in two parts; the parts E G H J should be glued up and aligned in a jig, so that the spacing is correct. Any woodworker can construct a simple jig.

The rest of the work is glued and nailed, and this part finally fitted in, and the curvature tested in a jig. Any refractory pieces showing signs of springing should be kept in a rough wood jig until the glue is set. Should any sand-papering be required small bench sanders should do the necessary work.

Every operation can be performed by girls, and the whole job is particularly adaptable to piecework rates and good output should be obtained by anyone capable of organisation.

A PERSONAL NOTE.

The samples of aeroplane parts by me leave a great deal to be desired in the way of workmanship and the methods of making these parts very slipshod. Also, according to details received, the method of manufacture common in aeroplane factories is slow and expensive, and the work itself confirms this.

I have been instrumental in the building of several toy-making concerns, many of which are doing exceedingly well, and I have, since the war began, endeavoured to introduce munition work into many of these factories. I have personally purchased and installed both German and English and American machinery of the very highest type for these factories, and they could execute the very finest work. But it is quite possible that the prejudice still exists, that anything will do to make toys.

As some people are aware, to make toys one must have the best machinery and organisation to turn them out on a quick repetition principle.

A PROMISE TO THE GOVERNMENT.

I am prepared to state that the Government would receive excellent and loyal service from the wood toy-manufacturing trades. The supplies of this class of small woodwork for aeroplanes could be greatly increased and improved without loss of time, without involving alterations in plant or the purchase of extra machinery, and without employing further hands. A large and thoroughly skilled body of workers is now employed, and a very large proportion of the male workers are wounded soldiers discharged from the army.

A MATTER OF STOCKS.

I would also point out that the stocks of timber for toys to be made for the coming year are practically nil, and to discharge the larger portion of these experienced workers, and to allow them to find work of minor importance, or to drift to other trades, when their skill could be readily used to the benefit of the country, is a pure waste of man-power.

Should this information be of material use to readers, and further information be required on wood-working subjects I shall be glad to give advice to them through this paper.

TO PREVENT WASTE.

Correspondence has passed between the British Workers' League, of which Mr. Hodge is president, and the Prime Minister concerning inefficiency and waste in many of the great spending Departments of the Government. The League drew Mr. Lloyd George's attention to the report of the Comptroller and Auditor-General on the accounts of the National Factories and the Royal Aircraft Factory for the year 1916-1917, urging that a small committee of inquiry of business men should be set up, and that persons responsible for waste should be dismissed.

The following reply was received on July 4th:—

"With further reference to your letter of June 10th, the Prime Minister desires me to say that he has carefully considered what you say on the subject of the recent report of the Comptroller and Auditor-General on the accounts of the National Factories and the Royal Aircraft Factory for the year 1916-1917. I am to explain that it is the function of the Comptroller and Auditor-General to examine departmental accounts, and to call the attention of Parliament to any features of the accounts which, in his opinion, present a prima facie case for investigation by the Public Accounts Committee of the House of Commons. The Committee is at present engaged on such an inquiry in connection with the above-mentioned report, and is taking whatever evidence may be necessary to elucidate the facts in the cases brought to their notice by the Comptroller and Auditor-General. The Committee will report to the House of Commons. The Executive Committee of the League will see, therefore, that the matters to which they have called the attention of the Prime Minister are already being investigated by a Committee of the House of Commons.

"The Prime Minister asks me to assure the League that the Government is fully alive to the necessity of enforcing economy in public Departments, and that every possible step is being taken to this end."

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L.T.D.

SOME AERONAUTICAL FALLACIES.

By "AFRAES."

Fallacy II.—*That the dihedral angle, per se, is directly responsible for lateral stability.*

It is not surprising that this fallacy finds a comfortable home in an enormous number of minds in view of the fact that it not only obtains ready circulation by word of mouth, but has also been perpetuated in the *litera scripta* of a goodly bunch of aeronautical text books.

Some of these manuals, especially those of the earlier days of the movement, were really very bad indeed. One forgives them readily when they are found to be going astray through a shortage in contemporary knowledge, but one is a little less inclined to excuse a clear case of want of logic. This, of course, is one of those instances in which the correct explanation is just as easy to set forth and just as easy to understand as the incorrect one, which is perhaps a little more obvious at first sight.

Let it not, however, be imagined that the fault of slip-shod thinking is confined to the earlier books, for here is an extract from the Aviation Pocket Book (1917 edition) by no less an author than Mr. R. Borlase Matthews, A.M.I.C.E., F.Ae.S., M.I.E.E. :—

> "A certain amount of lateral stability can be obtained by inclining the planes on each side of the machine at a slight dihedral angle. Under normal conditions the machine would be proceeding on an even keel . . . but owing to gusts or eddies it might be caused to heel over. It will be evident that the air pressure now acts more directly on the right hand plane (a diagram is given showing an aeroplane rolled to the right) than on the left hand one, or, in other words, that *the lifting force on the horizontal plane is greater than on the inclined plane.*"

The italics are mine, and are employed to emphasise what seems to me a regrettable misstatement of elementary fact, which ought to find no place in an authoritative publication. Mr. Borlase Matthews is, moreover, aided and abetted in disseminating this inaccuracy by other writers within the last year or two.

His and their argument appears to be as follows. If a dihedral angled machine rolls over, as shown in the accompanying diagram Fig. 1, the amount of lift on each wing is proportional to the projected area on a horizontal base line; that is to say, the lift of the wing X is proportional to the length A B, and that of the wing Y is proportional to the length A C.

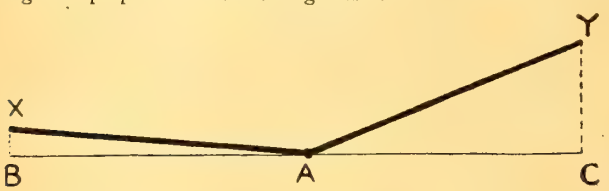


Fig. 1.

Now if A X = A Y, A B is obviously greater than A C and therefore, they say, X will have more lift than Y and there will thus be a force tending to restore the machine to an even keel.

Now this talk about different lifts, in this sense, is all poppycock, for if the wings are similar in speed, size, shape, section and angle of incidence, and the density of the air is the same for both, the force due to the reaction of the deflected air will obviously be exactly the same on each side. This is represented in Fig. 2.

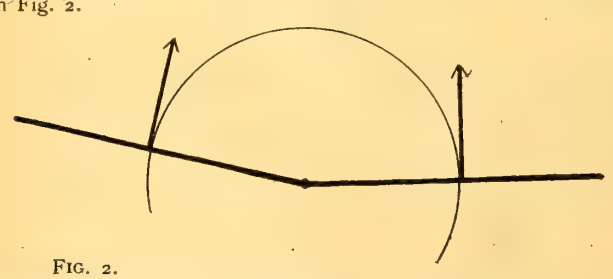


Fig. 2.

These forces are at right angles to the wings, and they are of the same magnitude, they act at equal radii and are opposing tangents to the same circle. Therefore they cannot, of themselves, do anything but neutralise one another. *They cannot of themselves promote any restoring action whatever.*

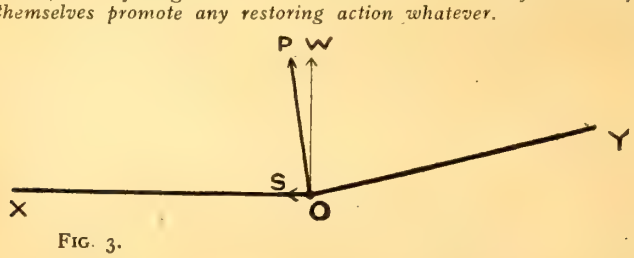


Fig. 3.

What, then, is the true explanation? It is this.

When the aeroplane heels over, the resultant lift force OP of the whole machine, as shown in Fig. 3, is no longer in a vertical position.

If it be split up, by means of the usual parallelogram principle, it is found to have two components, one of which O W is in direct opposition to the weight of the aeroplane, while the other is a horizontal force acting in the direction of the lower wing X.

The immediate effect of this force O S is to cause the aeroplane to yaw, or side-slip, in the direction of X, and it is solely because of this side-slip that the desired restoring couple is promoted.

Whether the machine has a dihedral or not, it cannot of itself return to an even keel without this side-slip.

If, as the figure shows, the total lift of the machine is reduced, it must lose height, and its fall will be in the line of least resistance. This must obviously be towards the direction of X, although of course the principal component of motion will still be in the straight-ahead direction. In any case, whether the aeroplane be regarded as flying forward or not, the same tendency to side-slip exists.

When the aeroplane side-slips the air deflected by the wings ceases to move squarely across them, and takes up a slightly diagonal flow. In planes of all kinds it is common knowledge that the Centre of Pressure tends to be nearer to the leading edge than to the trailing edge.

Normally, the C.P. would be in the line bisecting the two wings, i.e., at O in Fig. 4, but if the air is flowing diagonally, with a sideways movement from X to Y in addition to its usual

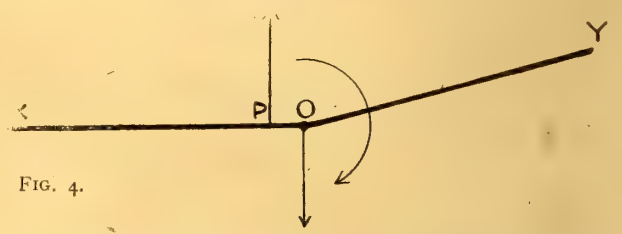


Fig. 4.

direction, then it is evident that the tip of the wing X is partially the leading edge, and that, in consequence, the C.P. will be located, not at O but somewhere along the line O X, say, at P.

The centre of gravity not having moved, we have the weight of the machine acting downwards through O, and the lift of the wings acting upwards through P. These two forces immediately produce a restoring couple working in the direction of the arrow and having the effect of bringing the machine back to an even keel.

A more complete refutation of the old fallacious argument could hardly be wanted than the fact that this restoring couple will be brought into existence by a side-slip even when the planes are set perfectly flat and consequently have no dihedral angle at all.

The effect of the couple is in this case not so rapid nor so strong as when a dihedral angle is employed, but an aeroplane with flat planes can be made inherently laterally stable, particularly when there is a sufficiently large area of fin above the Centre of Gravity.

Now, it is perfectly obvious that such finnage can be of no possible value in correcting a roll if the aeroplane simply cants over, but it is quite evident that it will promote a restoring effect provided the aeroplane accompanies the roll with a side-slip, which, needless to say, is what invariably happens.

The case is exactly similar to what is called the longitudinal dihedral angle in connection with fore and aft stability, whereby the angle of incidence of the leading surface is made greater than that of the trailing surface. For such an arrangement to be of any effect whatever the machine *must* move forwards or backwards. If it moved wholly sideways the longitudinal dihedral would have no influence on the stability of the machine. Similarly if, with a transverse dihedral angle on the wings, the aeroplane moves wholly forwards, then any such arrangement of the planes will make no difference in any way.

In short, it is NOT the dihedral angle, *per se*, which encourages lateral stability. It is solely because when the aeroplane rolls it inevitably side-slips, and the object of the dihedral angle is simply to take immediate and full advantage of this state of affairs.

The more and the sooner this fact becomes known and appreciated the better it will be for all concerned. Aeronautical science has no room for fallacies like this in its elementary stages.

ALL ABOUT MAGNETOS.

A new edition has just been produced of a very interesting booklet describing the works and methods of the makers of the "All-British 'M-L'" magnetos. A copy will be sent post free to any reader of this paper who applies to the M-L Magneto Synd., Ltd., Coventry.


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THE ROMANCE OF A NEW KEY INDUSTRY.

By R. P. Hearne.

In June, 1914, we were practically without a Magneto Industry. Our aeroplanes and our motor-cars went to the war equipped with the magnetos of Robert Bosch, of Stuttgart; and from this Bosch factory the output of magnetos had run into millions. He supplied the world. To-day a great British magneto industry is in full activity, meeting all our immense requirements in the war, and ready to fight Bosch after the war. This is one of our finest technical triumphs, and it is of immense national importance.

The magneto is the very heart of the petrol motor. It supplies the vital spark which sets the whole train of operations in motion. To leave our motor industry, even in peace times, under German monopoly for a vital essential was one of the most remarkable of our many blunders. But it was a blunder not easily corrected.

The Bosch Bugbear.

Bosch had by great enterprise and ceaseless scientific research built up a well-nigh impregnable monopoly. Not only did he produce an article which was universally regarded as the best, but by clever business methods he sold his wares at a price and under conditions which discouraged competition.

There is reason to believe that in his period of struggle Bosch was powerfully assisted by the German Government and by the semi-official system of finance and trade development which made Germany such a dangerous industrial competitor. Once Bosch had got his grip on the British market it would have been well-nigh impossible to dislodge him by ordinary commercial means. He held a big group of patents: and he was in possession of numerous manufacturing secrets, thanks to his magnificently organised factory and the scientific research departments allied with it.

The magneto was developed by him to a highly specialised product, full of "snags" and difficulties for the copyist. Even in the matter of raw material we were at a big disadvantage in 1914, for the types of steel and other materials required for magnetos were not obtainable in this country at the outbreak of war.

Indeed, so difficult was the whole problem of magneto manufacture in this country that one pessimistic wiseacre declared not so long ago that the real secret of the success of the Bosch magneto was due to the air of Stuttgart! It was impossible, he said, to make good instruments in this country for this reason.

The Spur of Necessity.

Matters tended towards a crisis when war motor transport developed to an unexpected degree, and when aviation became one of the big factors in the war. We could not make do with the existing stock of Bosch magnetos; and new types of engines and new technical requirements called for even better ignition appliances than the pre-war Bosch instruments.

One trembles to think what would have happened to us in aerial warfare during 1916 and 1917, and up to this day, if we had failed in solving the magneto problem. Our air engines would have been unreliable, and less speedy than the German machines. We should have been unable to fit out the immense number of aircraft necessary to meet the German menace.

What Might Have Been.

With a decided mechanical advantage in their aerial machines, as well in quality as in quantity, the Germans would have pushed home their advantage with the utmost vigour; and England to-day might have seen Germany with an established mastery of the air which would have jeopardised our military situation and exposed this country to terrific air raids.

Our road motor transport on every front would also have suffered from bad or insufficient magnetos, and hence our whole mobility would have depreciated, thus giving the Germans a most important gain over us. In scores of other ways, both in the Army and Navy, our failure with magnetos would have hit us very severely, for the internal combustion engine with its magneto has been adopted for a multitude of uses in the war.

Our Superiority.

Well, we have seen the Zeppelin campaign defeated, and we have seen, since 1917, a steady building up of our aerial superiority. Also it can be claimed that our road motor transport is the finest in the world.

The meaning of all this is that we have beaten Bosch of Stuttgart. Not only have we replaced his magnetos with British-made instruments, but we have gone ahead of him.

I have seen the latest Bosch magnetos from captured German machines compared point for point by experts with the latest British machines, and the technical verdict is strongly in favour of the British magnetos. That the verdict is correct is borne out by the superiority of our aircraft, for without a reliable and efficient magneto the best engine is of little utility.

Seeing is Believing.

During the month of June, 1918, I spent the best part of three days inspecting great British magneto factories which have sprung up since 1914. It would take me a week to go through all the huge magneto-producing works which now exist in various parts of the country, and so widely distributed are they that there is not the remotest fear of the work being interfered with by the enemy.

Our output of magnetos is now colossal, and the growth still goes on. We have research laboratories at work on every branch of the problem, though already we have solved the main difficulty, namely, the beating of Bosch. We now have a well established industry which ensures that we need never again rely on Germany for magnetos or for improvements in magnetos.

Already we can claim to be ahead of the enemy in magneto design and workmanship, and our designs are produced in quantities which guarantee that we shall have no lack of magnetos for every purpose of the war.

The Strength of Co-operation.

A little group of men forming the British Ignition Apparatus Association are mainly responsible for having brought about this great technical triumph. Not only did they set up factories, but they have worked in loyal co-operation to solve the intricate scientific and manufacturing problems which had to be faced.

This was quite a novel development in British industrial practice, where the habit is for each manufacturer to plough his own lonely furrow, insulating himself by secrecy and jealousy from other British firms.

Had this lone furrow system been adopted wholly in magneto manufacture the result would not have been happy to-day, for there would be failure in many respects, and confusion and overlapping, with resultant impoverishment of output.

As it is we have a powerful industry now well established, and fitted to meet the assaults of Bosch after the war. I cannot go into figures, but I may say that our immense war requirements in magnetos are being satisfactorily met by the British factories, and these figures mean that after the war we shall be able to supply not only the British Empire markets, but many others.

The importance of the magneto as a key industry cannot be overrated. It was sheer luck that we had in this country in 1914 sufficient Bosch magnetos to carry us over the period of transition. If aerial warfare had been developed more rapidly by the Germans—that is to say, before we got our magneto supplies ready—matters would have been very serious indeed for us.

A Useful Warning.

Never again can we afford to take such risks in any industry so vitally affecting war supplies, and for this reason alone it is essential that the British magneto industry be maintained in a vigorous and progressive state as well by the fostering care of the Government as by the firm support of the public. That this young industry, already using a capital that runs into millions and giving employment to many thousands of workers, should have so soon outpaced Bosch is one of the happiest auguries I know of. It shows that if we use our brains we can beat the German even in his most carefully guarded monopolies.

GERMAN PROPAGANDIST WORK.

A neutral correspondent writes:—

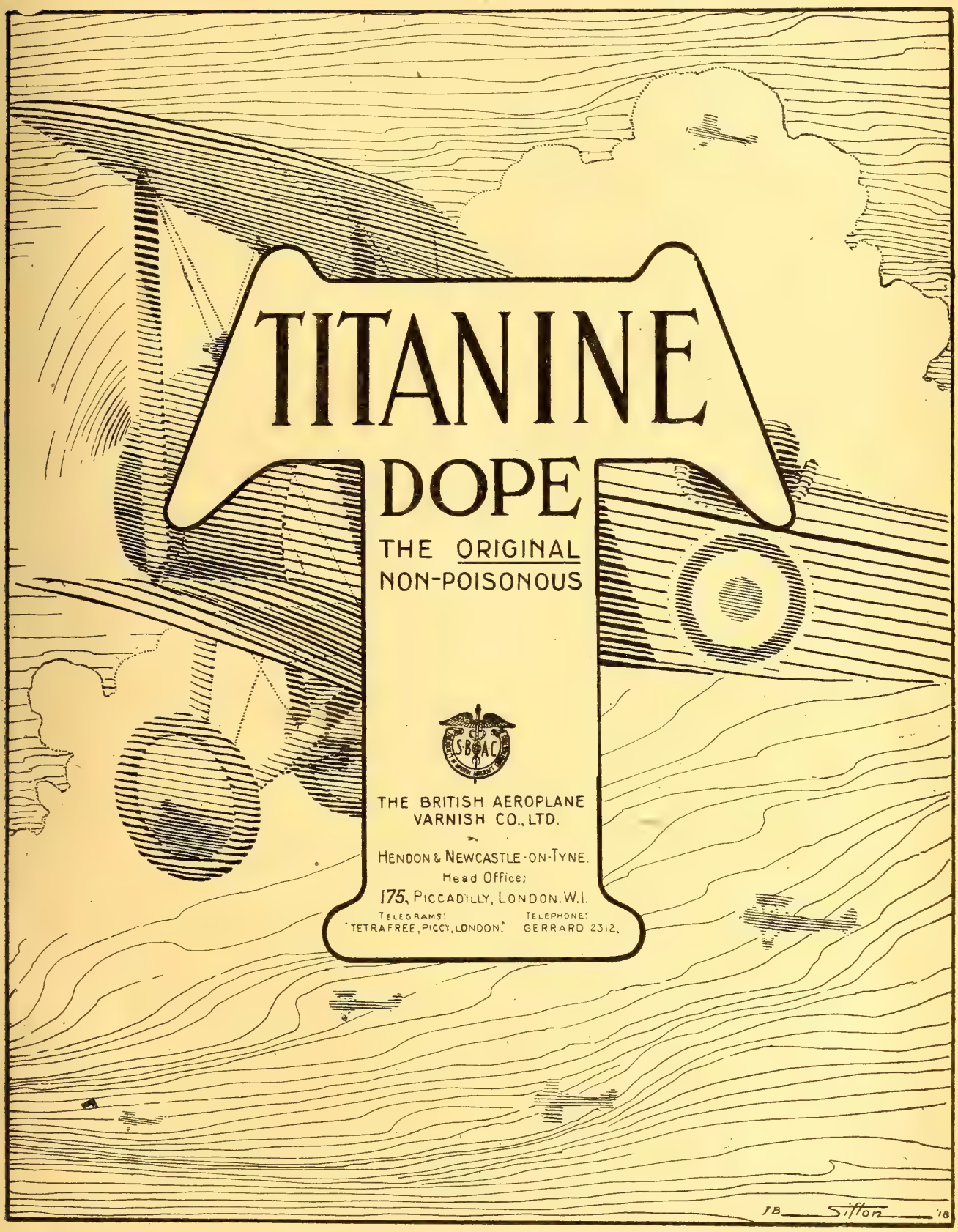
To bring the war in touch with those at home, and to impress even the neutral, a number of war pictures have been produced in Germany, out of which those of aerial warfare have not proved the least impressive.

A present German cinema show brings Gotha bombers and Albatros fighters on the ground before the eyes as well as the start of and flying impressions from two-seater patrol aeroplanes. All of these can easily have been produced behind the front, whereas the twin-motored Caudron set on fire is genuine, showing it till it nose-dives, the petrol tank exploding from the fire reaching it.

There exists apparently some connection between this film and the report in the German journal "Motor" of some film recording work carried out by the author, Heinz Karl Heiland, on "Giant" German aeroplanes.

The Albatros pusher-bomber includes in detail work more or less of the stabilizing fin of the same mark scout, the power eggs of the Gotha, the four-wheel landing gear of the earlier Ago twin-tail model, and double strut arrangement of Nieuport influence.

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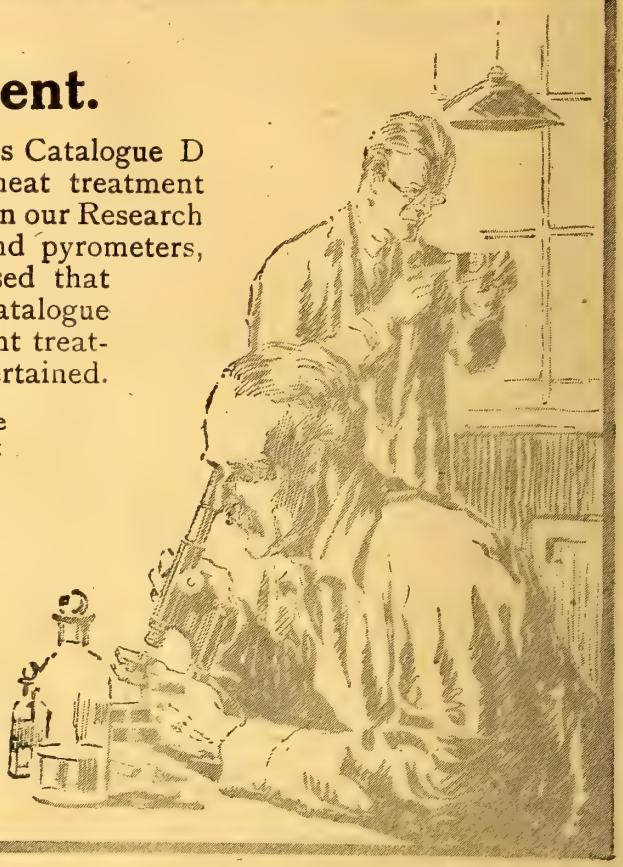
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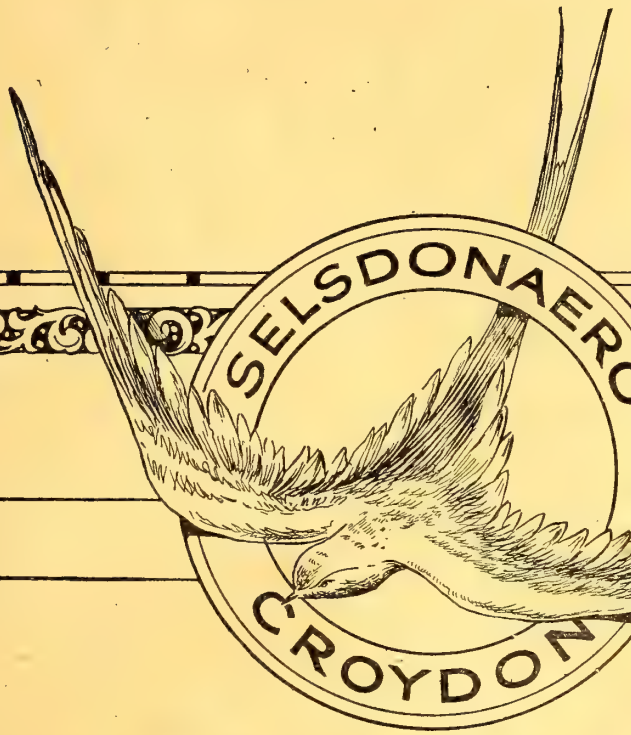
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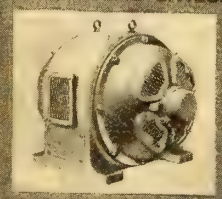




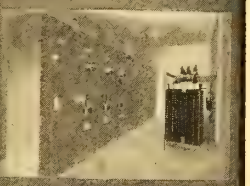
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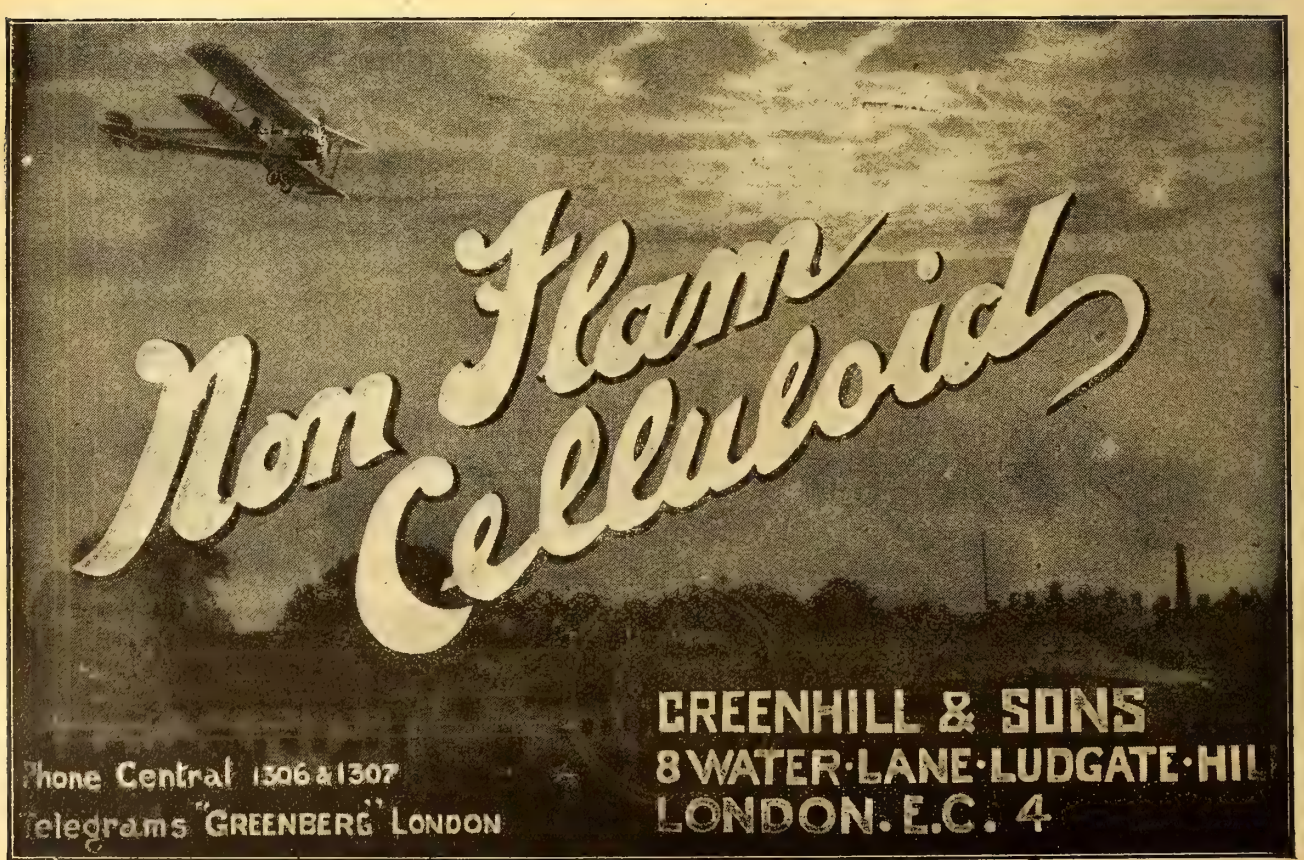
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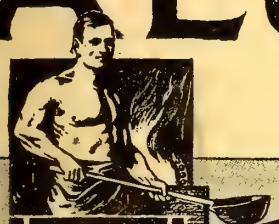
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Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich" Norwich 851.

British & Colonial Aeroplane Co., Ltd. (The Bristol Co.), Filton, Bristol. "Aviation, Bristol." Bristol 3906.

British Caudron Co., Ltd., Broadway, Cricklewood, N.W.2. "Caudroplan, Crickle, London." Hampstead 5551.

Central Aircraft Co., High Road, Kilburn, N.W.6. "Aviduction, Phone, London." Hampstead 4403 and 4424.

Davidson Aviation Co., Ltd., Hammersmith, W.6. Hammersmith 1992 (3 lines).

Dawson, John, & Co., Ltd., Newcastle-on-Tyne. "Dependable, Newcastle-on-Tyne." Central 2604 (2 lines).

Eastbourne Aviation Co., Ltd., Eastbourne. "Aircraft, Eastbourne" Eastbourne 1176.

Grahame-White Aviation Co., Ltd., London Aerodrome, Hendon. "Volplane, Hyde, London." Kingsbury 120.

Handley Page, Ltd., 110, Cricklewood Lane, N.W.2. "Hydrophid, Crickle, London." Hampstead 7420

Hooper & Co., Ltd., 54, St. James St., Piccadilly, London, S.W. "Sociable, St. James, London" Regent 912.

Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).

Martinsyde Ltd., Brooklands, Byfleet, "Martinsyde, Weybridge." Woking 331; Byfleet 171.

National Aircraft Manufacturing Co., Ltd., 15, Drummond Crescent, Seymour Street, Euston. Museum 3373.

"Nieuport" & General Aircraft Co., Cricklewood, London, N.W.2. "Nieuscout, Crickle, London." Willesden 2455.

The Regent Carriage Co., Ltd., 126/132, New King's Road, Fulham, S.W.6. "Carbodis, London." Putney 2240-2241.

Roe, A. V., & Co., Ltd., Manchester. "Triplane, Manchester" City 8530-8531, Manchester.

Saunders, S. E., Ltd., East Cowes, I.O.W. "Consuta, East Cowes." Cowes 103.

Short Bros., Rochester, Eastchurch and Whitehall House, S.W. "Tested, Phone, London." Regent 378.

Sopwith Aviation Co., Ltd., Kingston-on-Thames. "Sopwith, Kingston" Kingston 1988 (8 lines).

Standard Aircraft Manufacturing Co., 28, Bow Common Lane, E. East 2823.

Tarrant, W. G., Byfleet, Surrey. "Tarrant, Byfleet." Byfleet 1, 2 & 3.

Thames Aviation Works, 141, Curtain Rd., E.C.2. London Wall 9766.

Vickers, Ltd., Imperial Court, Basil Street, Knightsbridge. S.W.3 "Vickerfyta, Knights, London." Kensington 6810.

Waring & Gillow, Ltd., Hammersmith. "Warisen, Ox, London." Museum 5000.

Westland Aircraft, Yeovil. "Aircraft, Yeovil." Yeovil 129.

White, J. Samuel, & Co., Ltd., East Cowes. "White, East Cowes." Cowes 3.

Whitehead Aircraft (1917), Ltd., Richmond, Surrey. "Whitecraft, Richmond, Surrey." Richmond 1780-1.

Wycombe Aircraft Constructors, Ltd., High Wycombe, Bucks. "Aircraft, High Wycombe." High Wycombe 84.

Airships—

Airships, Ltd., High Street, Merton. Wimbledon 1314

Short Bros., Rochester, Eastchurch, and Whitehall House, S.W. "Tested, 'Phone, London." Regent 378.

Aluminium Castings (Sand and Die)

Coan, R. W., 219, Goswell Road, London, E.C.1. "Krankases, Isling, London." City 3846.

Bent Timber Parts—

Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496.
Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough" Market Harborough 13.

Bearings (Etonia Cast Phosphor Bronze)

Yorkshire Engineering Supplies, Ltd., Wortley, Leeds. "Yes, Leeds." Central 3927.

Blowpipes (Oxy-Acetylene)—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic. 4830.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Vic. 3540 (3 lines).

Brass Sheets for Tipping Propellers—

Pritt & Co., 46, Fenchurch Street, London, E.C.3. "Poetry, Fen, London." Avenue 995, 996, and 7996.

Buildings—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey. Wimbledon 1313.

Rubery, Owen, & Co., Darlaston, South Staffs.

The Wilfley Co., Ltd., Salisbury House, London Wall, E.C.2. "Wrathless, 'Phone, London." City 2681-2.

Cable Coverings and Cable Controls—

The Bowden Brake Co., Ltd., Tyseley, Birmingham. "Bowden, Acock's Green." Acock's Green 103 & 104.

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Carburettors—

Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2 Victoria 4670.

Casein—

Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C. 3. "Suricodon, Fen, London." Avenue 34 and 35.

Celluloid (Non-Flam.)—

Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London." Central 1306-7.

Clothing—

Burberry's, Ltd., Haymarket, S.W.1. Regent 2165.

Dunhill's, Ltd., Euston Road, N.W.1. "Dunsend, London." North 3405-6.

Coloured Rags—

Joseph, A., Earl Street, London Road Southwark, S.E.1. "New Mongo Sedist, London." Hop 83, 361, 4272.

Component Parts—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (4 lines).

Central Aircraft Co., High Road, Kilburn, N.W.6 "Aviduction, Phone, London." Hampstead 4403 & 4404.

P.D.V. Aircraft Co., Ltd., Princes Street, Richmond. "Acros, Richmond" Richmond 1681.

Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros., Bilston." Bilston 10.

Cords, Tapes, and Threads—

MacLennan, J., & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Dopes—

British Aeroplane Varnish Co., Ltd., 166, Piccadilly, W.1. "Tetrafree, Piccy, London." Gerrard 2312.

British Cellulose Co., 8, Waterloo Place, S.W.1. "Cellutate, London." Regent 4046.

The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.

Cellon, Ltd., 22, Cork Street, London, W.1. "Ajawb, Reg, London." Gerrard 440.

Clark Ingham, Robt., and Co., Ltd., Walter House, Bedford Street, Strand, W.C.2. "Pearline, Westrand, London." Regent 3923.

Engines and Parts—

Allen, W. H., & Co., Ltd., Bedford. "Pump, Bedford." Bedford No. 1.

Arrol-Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.

The Beatty School of Flying, Ltd., The Broadway, Cricklewood, N.W.2. Hampstead 3000.

Engines and Parts—

Beardmore Aero Eng., Ltd., 112, Great Portland Street, W.1. "Beardmore, London." Gerrard 238.

Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W.1. "Aeroflight, Vic, London." Vic. 7026.

Gordon Watney & Co., Ltd., Weybridge. "Mercédès, Weybridge" Weybridge 550 (7 lines).

Green Engine Co., Ltd., Twickenham Richmond 1203.

Gwynnes, Ltd., Hammersmith, W. "Gwynne, Hammersmith." Hammersmith 1910.

Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London." Gerrard 8926.

Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1654-5-6.

Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton." Wolverhampton 985.

The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1. "Elevenfold, London." Walthamstow 408 (2 lines).

Electrical Accessories—

Belling & Co., Montagu Road, Upper Edmonton, N.18. "Belling, Edmonton." Tottenham 1984.

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.

Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Euston road, London." Museum 70.

Premier Electric Heaters, Ltd., 258, 259, and 360, Bradford Street, Birmingham. "Fahrenheit, Birmingham." Midland 981.

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Electric Cables—

E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 24x.

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2207; London Wall 1564.

Electric Lighting and Power—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.

Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Euston road." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—

W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines).

Enamel—

Silica Enamel Co., New Cross, London, S.E.

Flare Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flexible Shafts—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Fluxes—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools—

Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton." Bournemouth 1160.

Cambridge School of Flying and Aerodrome Co., 308, St Andrews Street, Cambridge. "Carbon, Cambridge." Cambridge 5 and 1086.

Furniture (Office)—

Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2. London Wall 573 and 6179.

Galvanising—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

Gauges—

J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17.

Gears—

Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham. "Mosgear, Birmingham." East 407.

· Buyers' · Guide.



Glue—
Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Bececolin, Cannon, London." City 1206.
Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Wapp, London." Avenue 3178.
Meudine Co., 8, Arthur Street, E.C. Bank 5873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3.

Goggles—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Hack Saw Blades and Machines—
Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880.

Heating and Ventilating—
Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 372 (2 lines).
Sturtevant Engineering Co, Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).

Hollow Spars—
McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718.

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1108.

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17. "Aneroid, Phone, London." Walthamstow 180.

Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London. "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1. "Vicksmag, Phone, London" Museum 430.
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry. 'Corlton, Coventry." Coventry 1008-1009.

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham. "Clifford, Birmingham." Central 42-43. Avenue 1432.

Metals in General—
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.
Pritt & Co., 46, Fenchurch Street, London, E.C.3. "Poetry, Fen, London." Avenue 995, 996, and 7996.
Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London." City 6342.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4959.
Aircraft Supplies Co, Ltd., Ascol House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton 1041.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3. Avenue 1432.
Lombard Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).

Metal Parts and Fittings—
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing. Eusroad, London." Museum 70.
Mountford, Fredk., Lt., Lifford, Birmingham. "Fremo, Birmingham." King's Norton 261.
Rubery Owen & Co., Darlaston, South Staffs.
Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston." Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford." Keynsham 21.

Metal Spinnings—
Arnold & Sons, Lawrence Road, Tottenham, N.15.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.
Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith "Frodobrake, Birmingham." Central 793.
MacLennan, J., & Co, 30, Newgate Street, E.C.1, and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines)

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2 "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemalvo, Ave, London." London Wall 3266-3267.

Pattern Making—
Fredk. Ward, 6, 7 and 8, Allsop Street, Upper Baker Street, W. Padd. 4743.

Piston Rings—
British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.

Plating, Nickel Silver and Electro Tinning—
Arnold & Sons, Lawrence Road, Tottenham, N.15.

Power Presses and Dies—
Bliss, E. W., & Co., 2a, Pocock Street, Blackfriars Road, London, S.E.1. "Blissdon, London." Hop. 4340.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames. "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104.
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." 24214 Leeds.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil. Yeovil 129.

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Inventors, Redditch." Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).
Gosport Aircraft Co., Gosport. "Flight, Gosport" Telephone No. 217.
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Southampton 1337.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds Leeds 21953.

Searchlights & Landing Lights—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London."

Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd, Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Arnold & Sons, Lawrence Road, Tottenham, N.15.
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London" Vic 4830.
Arnold & Sons, Lawrence Road, Tottenham, N.15.
British Metal (Kingston), Ltd., Kingston-on-Thames. [Staffs
Rubery Owen & Co, Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
Arthur Hill & Co., Silchester Road, North Kensington, W. Park 1443.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

BUYERS' GUIDE cont. on next page.



The · Aeroplane ·

Acceptance and Experimental Flights—
The Prudger Isaac Aviation Co. "Aeromnia, Piccy, London" Gerrard 278 (2 lines).

Acetylene Welding Plant—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic 4830
Imperial Light, Ltd., 123, Victoria Street, London, S.W 1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Aeroplane Manufacturers—
Aircraft Manufacturing Co, Ltd., Hendon. 'Airmanship, Hyde, London" Kingsbury 220.
Armstrong, Sir W., Whitworth & Co., Ltd., Newcastle - on - Tyne "Armstrong Aviation, Newcastle-on-Tyne." Gosforth 500.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich" Norwich 851.
British & Colonial Aeroplane Co., Ltd. (The Bristol Co.), Filton, Bristol "Aviation, Bristol" Bristol 3066
British Caudron Co., Ltd., Broadway, Cricklewood, N.W.2. "Caudroplan, Crickle, London." Hampstead 1651.
Central Aircraft Co, High Road, Kilburn, N.W 6. "Aviduction, Phone, London." Hampstead 4403 and 4404.
Davidson Aviation Co., Ltd., Hammersmith, W 6 Hammersmith 1092 (3 lines).
Dawson, John, & Co., Ltd., Newcastle-on-Tyne. "Dependable, Newcastle-on-Tyne." Central 2604 (2 lines).
Eastbourne Aviation Co., Ltd., Eastbourne. "Aircraft, Eastbourne" Eastbourne 1176.
Grahame-White Aviation Co, Ltd, London Aerodrome, Hendon "Volplane, Hyde, London" Kingsbury 120
Handley Page, Ltd, 110, Cricklewood Lane, N.W.2. "Hydrophid, Crickle, London." Hampstead 7320
Hooper & Co., Ltd., 54, St. James St., Piccadilly, London, S.W. "Sociable, St. James, London" Regent 912.
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).
Martinsyde Ltd, Brooklands, Byfleet, "Martinsyde, Weybridge" Woking 337; Byfleet 171
National Aircraft Manufacturing Co, Ltd, 15, Drummond Crescent, Seamour Street, Euston Museum 3573
"Nieuport" & General Aircraft Co, Cricklewood, London, N.W.2. "Nieuscout, Crickle, London." Willesden 2455.
The Regent Carriage Co, Ltd., 126/132, New King's Road, Fulham, S.W.6. "Carbodis, London" Putney 2210-2241.
Roe, A. V., & Co, Ltd, Manchester. "Triplane, Manchester" City 8510 8511, Manchester.
Saunders, S E, Ltd, East Cowes, I O W "Consuta, East Cowes" Cowes 103
Short Bros, Rochester, Eastchurch and Whitehall House, S W "Tested, Phone, London" Regent 578.
Sopwith Aviation Co, Ltd, Kingston-on-Thames "Sopwith, Kingston" Kingston 1088 (8 lines)
Standard Aircraft Manufacturing Co, 28, Bow Common Lane, E East 2823.
Tarrant, W G., Byfleet, Surrey "Tarrant, Byfleet." Byfleet 1, 2 & 3.
Thames Aviation Works, 131, Curtain Rd, E C 2 London Wall 9766.
Vickers, Ltd., Imperial Court, Basil Street, Knightsbridge S W 1 "Vickerfyta, Knights, London" Kensington 6870
Waring & Gillow, Ltd., Hammersmith. "Warisen, Ox, London" Museum 5000.
Westland Aircraft, Yeovil. "Aircraft, Yeovil" Yeovil 129.
White, J Samuel, & Co., Ltd., East Cowes. "White, East Cowes" Cowes 3.
Whitehead Aircraft (1917), Ltd., Richmond, Surrey "Whitecraft, Richmond, Surrey" Richmond 1680-1.
Wycombe Aircraft Constructors, Ltd, High Wycombe, Bucks "Aircraft, High Wycombe." High Wycombe 84

Airships—
Airships, Ltd., High Street, Merton Wimbledon 1314
Short Bros, Rochester, Eastchurch, and Whitehall House, S W "Tested, 'Phone, London" Regent 578

Aluminium Castings (Sand and Die)
Coan, R. W., 219, Goswell Road, London, E.C.1. "Krankases, Isling, London." City 3846

Bent Timber Parts—
Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London" Museum 496.
Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.

Bearings (Etonia Cast Phosphor Bronze)
Yorkshire Engineering Supplies, Ltd., Wortley, Leeds. "Yes, Leeds." Central 5927.

Blowpipes (Oxy-Acetylene)—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S W.1 "Flamma, Vic, London." Vic. 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Vic. 3540 (3 lines).

Brass Sheets for Tipping Propellers—
Pritt & Co., 46, Fenchurch Street, London, E.C.3. "Poetry, Fen, London." Avenue 995, 996, and 7996.

Buildings—
Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.
The Camden Construction Co, Ltd, 289, High Street, Camden Town, N W 1
Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey. Wimbledon 1513
Rubery, Owen, & Co., Darlaston, South Staffs
The Wilfley Co., Ltd, Salisbury House, London Wall, E.C.2. "Wrathless, 'Phone, London." City 2681-2.

Cable Coverings and Cable Controls—
The Bowden Brake Co., Ltd., Tyseley, Birmingham "Bowden, Acock's Green" Acock's Green 103 & 104.
Herbert Terry & Sons, Ltd, Redditch "Springs, Redditch." Redditch 61.

Carburettors—
Hobson, H M., Ltd., 29, Vauxhall Bridge Road, S.W.2 Victoria 4670

Casein—
Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C 3 "Suricolon, Fen, London" Avenue 34 and 35.

Celluloid (Non-Flam.)—
Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London" Central 1306-7.

Clothing—
Burberry's, Ltd., Haymarket, S.W.1. Regent 2165.
Dunhill's, Ltd., Euston Road, N.W.1. "Dunsend, London" North 3405-6.

Coloured Rags—
Joseph, A., Earl Street, London Road Southwark, S E.1 "New Mongo Solist, London" Hop 83, 367, 4272.

Component Parts—
Accles & Pollock, Ltd., Oldbury, Birmingham "Accles, Oldbury" Oldbury 111 (3 lines).
Central Aircraft Co, High Road, Kilburn, N.W 6 "Aviduction, Phone, London" Hampstead 4403 & 7304
P.D.V. Aircraft Co, Ltd, Princes Street, Richmond. "Acros, Richmond" Richmond 1651.
Thompson Bros. (Bilston), Ltd, Bradley, Bilston, England. "Thompson Bros., Bilston" Bilston 10.

Cords, Tapes, and Threads—
MacLennan, J, & Co, 30, Newgate Street, E C 1 And at Glasgow. City 3115.

Dopes—
British Aeroplane Varnish Co., Ltd., 166, Piccadilly, W 1 "Tetrafree, Piccy, London" Gerrard 2512.
British Cellulose Co, 8, Waterloo Place, S.W 1 "Cellutate, London" Regent 3046.
The British Emaillite Co., Ltd, 30, Regent Street, S.W.1. "Ridleypren, Piccy, London" Gerrard 280.
Cellon, Ltd., 22, Cork Street, London, W 1. "Ajaysh, Reg, London" Gerrard 110.
Clark Ingham, Robt, and Co, Ltd, Walter House, Bedford Street, Strand, W C 2 "Pearline, Westrand, London" Regent 3025.

Engines and Parts—
Allen, W H, & Co., Ltd, Bedford "Pump, Bedford" Bedford No. 1
Arrol-Johnston, Ltd., Dumfries "Mocar, Dumfries" Dumfries 281-282
The Beatty School of Flying, Ltd, The Broadway, Cricklewood, N W 2 Hampstead 3900

Engines and Parts—
Beardmore Aero Eng., Ltd, 112, Great Portland Street, W 1. "Beardmore, London." Gerrard 238.
Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S W.1 "Aerohight, Vic, London." Vic 7026.
Gordon Watney & Co., Ltd, Weybridge. "Mercédès, Weybridge" Weybridge 550 (7 lines).
Green Engine Co., Ltd., Twickenham Richmond 1203.
Gwynnes, Ltd, Hammersmith, W. "Gwynne, Hammersmith." Hammersmith 1040
Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London." Gerrard 3026.
Rolls-Royce, Ltd., 14 and 15, Conduit Street, W 1. "Rolhead, London." Gerrard 1654-5-6.
Sunbeam Motor Car Co., Ltd., Wolverhampton "Moorfield, Wolverhampton" Wolverhampton 955.
The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S W.1 "Elevenfold, London." Walthamstow 408 (2 lines).

Electrical Accessories—
Belling & Co., Montagu Road, Upper Edmonton, N.18. "Belling, Edmonton." Tottenham 1984.
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564
Mann, Egerton & Co, Ltd, 177, Cleveland Street, London, W.1. "Installing, Eusroad, London." Museum 70
Premier Electric Heaters, Ltd, 258, 259, and 360, Bradford Street, Birmingham "Fahrenheit, Birmingham" Midland 681
The Rotax Motor Accessories Co, Ltd, Victoria Road, Willesden Junction, N W 10. "Rodynalite, Phone, London" Willesden 2280

Electric Cables—
E. Kalker and Co., Coventry "Kalker, Coventry" Coventry 218
Johnson & Phillips, Ltd, Charlton, London, S.E.7. "Juno, London" Central 2207; London Wall 1564

Electric Lighting and Power—
Johnson & Phillips, Ltd, Charlton, London, S E 7 "Juno, London" Central 2207; London Wall 1564
Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Eusroad" Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—
W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines).

Enamel—
Silica Enamel Co., New Cross, London, S E

Flare Lights—
Imperial Light, Ltd., 123, Victoria Street, London, S W.1 "Edibrac, 'Phone, London" Victoria 3540 (3 lines).

Flexible Shafts—
Herbert Terry & Sons, Ltd, Redditch. "Springs, Redditch." Redditch 61.

Fluxes—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London" Victoria 3540 (3 lines).

Flying Schools—
Bournemouth Aviation Co., Ltd, Talbot Village, Bournemouth. "Etches, Winton" Bournemouth 1160
Cambridge School of Flying and Aerodrome Co, 108, St Andrews Street, Cambridge. "Carbon, Cambridge", Cambridge 5 and 1086.

Furniture (Office)—
Cookes (Finsbury), Ltd, Finsbury Pavement House, London, E C 2 London Wall 571 and 6179.

Galvanising—
Boulton & Paul, Ltd, Rose Lane, Norwich. "Aviation, Norwich" Norwich 851.

Gauges—
J A. Prestwich & Co., Northumberland Park, Tottenham, N 17

Gears—
Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham. "Mossgear, Birmingham" East 407



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Glue—
Cannon, B, & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E C.4. "Bececolin, Cannon, London" City 1206.
Improved Liquid Glues Co., Ltd., Gt Hermitage Street, E. (Croid.) "Excroiden, Wapp, London." Avenue 3178.
Meudine Co., 8, Arthur Street, E C. Bank 5873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3.

Goggles—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Hack Saw Blades and Machines—
Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E C. "Vicsaw, Phone, London." London Wall 1880.

Heating and Ventilating—
Chas F Kinnell & Co., Ltd, 65 & 65A, Southwark Street, London, S E 1 "Kinnell, London" Hop 372 (2 lines)
Sturtevant Engineering Co, Ltd, 147, Queen Victoria Street, London, E C.4. "Sturtevant, London." Central 7121 (6 lines).

Hollow Spars—
McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London" Hop 718

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1308

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 622.
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17 "Aneroid, Phone, London" Walthamstow 180

Leather Cloth—
New Pegamoid, Ltd, 134, Queen Victoria Street, London "Pegamoid, Cent, London" City 9703 (2 lines)

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd, Redditch "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1 "Vicksmag, Phone, London" Museum 430.
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry" Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry." Coventry 1008-1009

Metal Manufacturers—
Clifford, Chas, & Sons, Ltd., Birmingham "Clifford, Birmingham" Central 4243 Avenue 1152

Metals in General—
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.
Pritt & Co, 46, Fenchurch Street, London, E C 3 "Poetry, Fen, London." Avenue 995, 996, and 7996
Samuel Mercer & Co., 198, Upper Thames Street, E C.4 "Reconciled, Cannon, London." City 6342.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines)
Aeroplane General Sundries, Ltd, Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4059
Aircraft Supplies Co, Ltd., Ascot House, 125, Long Acre, W C 2 "Upcast, Rand, London" Gerrard 278 (2 lines)
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction Willesden 2207
Bayliss, Jones & Bayliss, Ltd, Wolverhampton. (Bolts and Nuts) "Bayliss, Wolverhampton" Wolverhampton 1011
Blackburn Aeroplane & Motor Co, Ltd, Olympia, Leeds. "Propellors, Leeds" Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3. Avenue 1152.
Lombard Rim and Tube Co., Lombard Street, Birmingham "Lombardic, Birmingham." Midland 211 (2 lines).

Metal Parts and Fittings—
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing. Eusroad, London." Museum 70.
Mountford, Fredk., Lt., Lifford, Birmingham. "Fremo, Birmingham" King's Norton 261
Rubery Owen & Co., Darlaston, South Staffs
Sankey, Joseph, & Sons, Ltd, Wellington, Shropshire. "Sankey, Wellington, Salop" Wellington 60
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C 1. "Pulvipult, Phone, London." Holborn 410
The Selsdon Aero & Engineering Co, Ltd, 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London" Regent 1181.
The Rotax Motor Accessories Co, Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2280.
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston" Bilston 10
Wooler Engineering Co, Ltd, Old Oak Common Lane, Willesden Junction, N.W 10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol "Ingenuity, Saltford." Keynsham 21.

Metal Spinnings—
Arnold & Sons, Lawrence Road, Tottenham, N.15.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415
Rubery Owen & Co, Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast" Belfast 4033-4034-4035
Bowden Wire, Ltd., Willesden Junction, "Bowirehm, Harles, London" Willesden 2400 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros, Ltd, Great Eastern Street, E.C.1. "Inbrowned, Bothroad, London" London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith "Frodobrake, Birmingham" Central 793
MacLennan, J., & Co, 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads City 3115

Motor Cars—
Arrol-Johnston, Ltd., Dumfries "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London" Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines)

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co, Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340

Oils—
C. C. Wakefield & Co, Ltd., Wakefield House, Cheapside, E.C.2 "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C "Savemalvo, Ave, London" London Wall 3266-7207

Pattern Making—
Fredk. Ward, 6, 7 and 8, Allsop Street, Upper Baker Street, W. Padd. 4745

Piston Rings—
British Chuck & Piston Ring Co., Coventry "Rings, Coventry" Coventry 725
The Standard Piston Ring and Engineering Co, Ltd, Don Road, Sheffield "Ocean, Sheffield" Sheffield 2149

Plating, Nickel Silver and Electro Tinning—
Arnold & Sons, Lawrence Road, Tottenham, N 15

Power Presses and Dies—
Bliss, E. W., & Co., 28, Pocock Street, Blackfriars Road, London, S.E 1. "Blissdon, London" Hop. 4340.

Presswork—
Rubery Owen & Co, Darlaston, South Staffs
Terry, Herbert & Sons, Ltd, Redditch. "Springs, Redditch" Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston." Kingston 672
Integral Propeller Co, Ltd. "Aviprop, Hyde, London." Hendon 9 Kingsbury 104.
Lang Propeller, Ltd, Weybridge "Acrosticks, Weybridge" Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." 24214 Leeds.
Stanley Aviation Co., 67, Kingsland Road, E 2 City 8547.
Westland Aircraft, Yeovil "Aircraft, Yeovil. Yeovil 129.

Propeller Cases—
The Camden Construction Co., Ltd, 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth Letchworth 26

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England "Cradock, Wakefield" Wakefield 266

Screw-driving Machines—
Russell Bros (Redditch), Ltd, Littleworth, Redditch "Invertors, Redditch" Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co, Ltd, Olympia, Leeds "Propellors, Leeds" Roundhay 345 (3 lines)
Gosport Aircraft Co., Gosport "Flight, Gosport" Telephone No 217
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines)
Short Bros, Rochester "Seaplanes, Rochester" Chatham 627
Supermarine Aviation Co., Ltd., Southampton "Supermarine, Southampton" Southampton 1337

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds Leeds 21053

Searchlights & Landing Lights—
Imperial Light, Ltd, 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London" 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N W 10. "Rodynalite, Phone, London" Willesden 2280.

Shackles—
British Cold Shell Ring Co, Ltd, Hounslow, Middlesex "Golshel, Hounslow" Hounslow 254

Sheet Metal Pressings—
Accles & Pollock, Ltd, Oldbury, Birmingham. "Accles, Oldbury" Oldbury 111 (3 lines)
Arnold & Sons, Lawrence Road, Tottenham, N 15
Blackburn Aeroplane and Motor Co, Ltd, Olympia, Leeds. "Propellors, Leeds." Roundhay 345.
W H Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham" Central 550
British Metal (Kingston), Ltd., Kingston-on-Thames
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd, 49, Victoria Street, S W 1. "Flamma, Vic, London" Vic 4830
Arnold & Sons, Lawrence Road, Tottenham, N 15
British Metal (Kingston), Ltd., Kingston-on-Thames [Staffs
Rubery Owen & Co, Darlaston, South
The Selsdon Aero & Engineering Co, Ltd., 1, Albemarle Street, Piccadilly, W 1 "Selaero, Phone, London" Regent 1181
Arthur Hill & Co, Silchester Road, North Kensington, W. Park 1443.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London" Victoria 3540 (3 lines).

BUYERS' GUIDE cont. on next page.

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Small Tools—
The Small Tool Supply Co., Ltd., Avenue Chambers, Southampton Row, W.C. "Prosait, West-Cent., London." Museum 2655.

Sparking Plugs—
Lodge Sparking Plug Co, Ltd., Rugby. "Igniter, Rugby." Rugby 235.
Ripault, Léo. & Co., Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

Springs—
Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 422.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Stampings—
Arnold & Sons, Lawrence Road, Tottenham, N.15.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3. Avenue 1432.

Steel—
Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 to 3237.
Guthrie, J. B., & Son, 30, St Mary Axe, E.C.3. Avenue 1432.
Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Steel Stamps and Markings—
John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).

Tanks & Cowls for Aeroplanes
Zephyr Ventilating Co., Ltd., Tyopiatt Road, Bristol. Telegrams — Zephyr, Bristol.

Taper Pins—
Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—
MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Timber—
Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526.
Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.
J. Owen & Sons, Ltd., 109a, Borough High Street, S.E.1. "Bucheron, London." Hop 3811 (2 lines).

Time Recorders—
Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles— Staffs.
Rubery Owen & Co., Darlaston, South
Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Euston road." Museum 70 (4 lines).

Tyres and Wheels—
The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent." Gerrard 1214 (5 lines).

Undercarriages—
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.
Clark Ingham, Robt., & Co., Ltd., Walter House, Bedford Street, Strand, W.C.2. "Pearline, Westrand, London." Regent 3923.
Harland, W., & Son, Merton, London, S.W.19. "Harland, Wimbledon 45." Wimbledon 45 and 1395
Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—
Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95.

Washers— Avenue. 1432.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Watchmakers and Jewellers—
(Silver Models)—
Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines).

Welding and Cutting Plant—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma Vic, London." Vic 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Welding Repairs—
Arnold & Sons, Lawrence Road, Tottenham.
Barimar, Ltd., 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.
The New Welding Co., 26, Rosebery Avenue, London, E.C.1. "Windoneeda, Holb, London." Holborn 5252.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Wind Shields—
Auster, Ltd., 133, Long Acre, W.C. "Winflector, London." Regent 5010.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesdon Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Wire Gauze—
Greening, N., & Sons, Ltd., 16, Finsbury Street, London, E.C.2. "Setscrew, Finsquare, London." London Wall 1082.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3. Avenue 1432.

Wires and Cables—
Bruntons, Musselburgh, Scotland. "Wiremill, Musselburgh." Musselburgh 28.
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466 (3 lines).

Wirework—
Terry, Herbert, & Sons Ltd., Redditch. "Springs, Redditch." Redditch 61.

Woodworking Machinery—
Robinson, Thomas, & Son, Ltd., Rochdale. "Robinson, Rochdale." Rochdale 467.
Sagar, J., & Co., Ltd., Halifax. "Sawtooth, Halifax." Halifax 136.
Wadkin & Co., Leicester. "Woodworker, Leicester." Leicester 3614.

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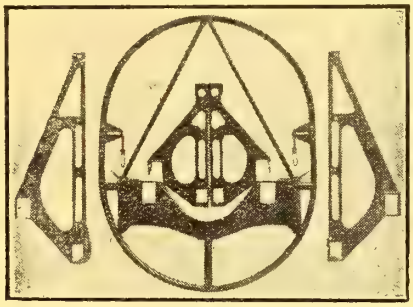
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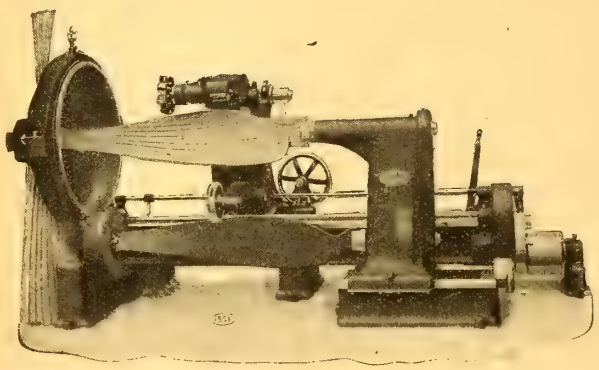
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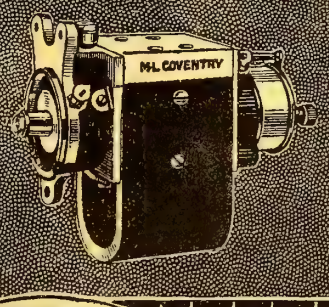
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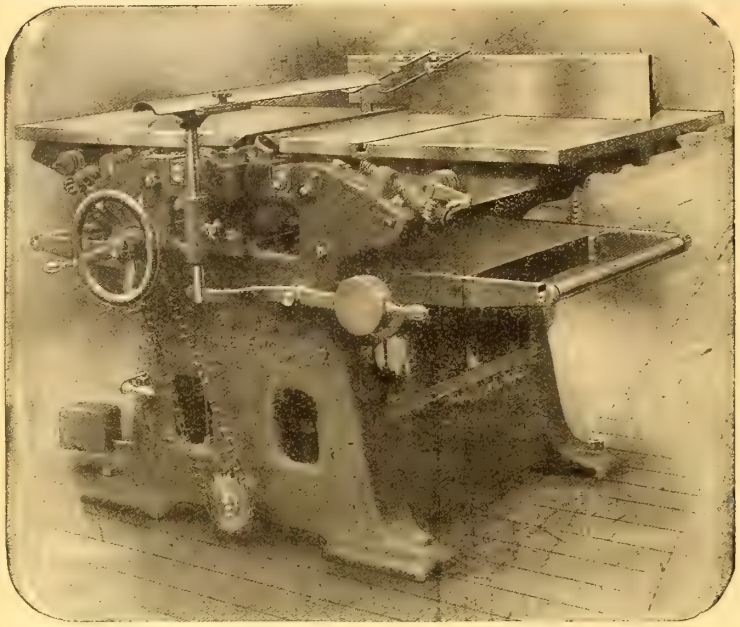
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THE PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by The Aeroplane from the current Official Patents Records.

Patent Applications.

Barr and Stroud. Predictors for anti-aircraft, etc., gunnery. No. 11235. July 9th.
Bell, H. C. Bombing gear. No. 11339. July 10th.
Blackburn Aeroplane and Motor Co. Jigs for setting and holding articles for and during mechanical operations thereon. No. 11298. July 10th.
Blackburn Aeroplane and Motor Co. Controlling-devices for internal combustion engines for aircraft, etc. No. 11299. July 10th.
Blackburn Aeroplane and Motor Co. Controlling-devices for aircraft. No. 11300. July 10th.
Blackburn Aeroplane and Motor Co. Flying-boats. No. 11363. July 11th.
Blackburn Aeroplane and Motor Co. Controlling-devices for aircraft. No. 11364. July 11th.
Blackburn Aeroplane and Motor Co. Regulating cooling of internal combustion engines on aircraft, etc. No. 11437. July 11th.
Boulton and Paul. Control-devices for aircraft. No. 11436. July 12th.
Bugatti, E. Mounting guns on aircraft. No 11260. July 9th.
Butt, E. E. W. Air-ships. No. 11325. July 10th.
Butt, E. E. W. Air-ships. No. 11326. July 10th.
Butt, E. E. W. Air-ships. No. 11327. July 10th.
Channon, F. W. Aerial propellers. No. 11384. July 11th.
Clifton, W. E. Photo theodolite apparatus for use in ascertaining exact position and range of gun by photo recording gun flashes directing artillery fire at night and surveying generally. No. 11222. July 9th.
Cracknell, R. J. Internal-combustion engines for aircraft. No. 11206. July 8th.
Harding, C. de V. Anti-aircraft gun sights. No. 11152. July 8th.
Jennings, H. Aerial defence against hostile aircraft. No. 11243. July 9th.
Knight, J. Means for synchronisation of machine-guns when firing through propellers of aeroplanes. No. 11354. July 11th.
Levasseur, P. Aerial propellers. No. 11405. July 11th.
Mooney, D. J. Treating steel for aircraft. No. 11148. July 8th.
Mooney, D. J. Metal construction of aircraft. No. 11149. July 8th.
Morris, A. Aviator's level. No. 11521. July 13th.
Moulet, J. L. L. A. A. Regulating pumps applicable to aerial machine motors. No. 11251. July 9th.
Nash, H. Emergency devices for leaving aeroplanes, etc. No. 11307. July 10th.
Notarianni, G. Manless airship for use in war. No. 11513. July 13th.
Oates, G. W. Dope can. No. 11426. July 12th.
Overaas, N. Range-finder for aerial targets. No. 11312. July 10th.
Stubbs, J. W. Clinometer for aircraft. No. 11509. July 13th.
Sturdy, P. Direction indicator and telegraph for air, sea, or land. No. 11421. July 12th,
Taplin, T. J. Stabilisers for aeroplanes. No. 11403. July 11th.
Tarrant, W. G. Materials for forming fairings for aircraft, etc. No. 11387. July 11th.
Tucker, J. B. Apparatus for indicating speed of vehicles, aerial and water craft, etc. No. 11418. July 12th.
Wilkinson, C. H. Level-indicator for aeroplanes. No. 11416. July 12th.

Complete Specifications Accepted, Prints of which can be Obtained on and after August 1st, 1918.

16,821/15. Nov. 30th, 1915. Page. Covering fabric of aeroplanes and the like.
102,154. Nov. 6th. 1915. Beurrier, A., Bigourdan, E., and Lacoin, L. Flying-machines with revolving wings.
117,092. March 21st, 1917. Calthrop, E. R. Parachutes.
117,096. Down, T. M. Aeronautical sighting and range-finding device for use in speed-measuring and bomb-dropping observations upon aircraft.
117,115. July 3rd, 1917. Bowen, E. W. Spring-suspension of road vehicles and landing gear for aircraft.
117,119. July 3rd, 1917. Sloper, T. Pneumatic cushioning devices.

Abridgements of recently published Specifications.

115,704. Aeronautics. Saunders, S. E., The White House, East Cowes, Isle of Wight.

Planes, Arrangement of.—The planes of an aeroplane are made detachable from the fuselage as an integral structure by forming a gap in the wing structure which is slipped over the fuselage from above or below or over one end. Fig. 1 shows one

FIG. 1.

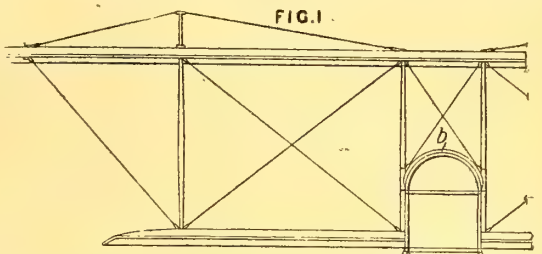
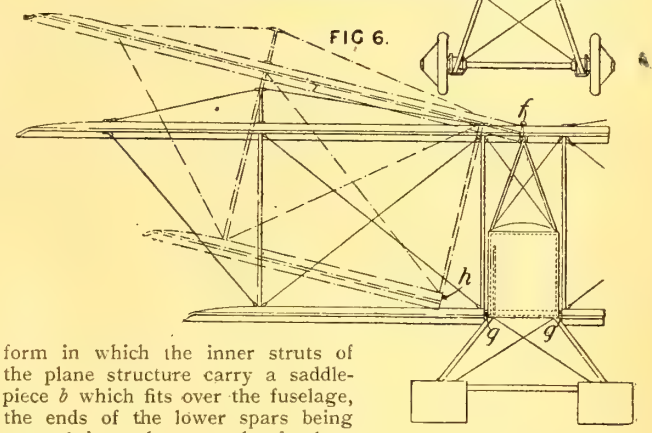


FIG 6.



form in which the inner struts of the plane structure carry a saddle-piece b which fits over the fuselage, the ends of the lower spars being secured in sockets on the fuselage by pins or bolts. Fig. 6 shows a modification in which the two halves of the plane structure are hinged at f, and the spars of the lower planes have spigot ends h provided with lateral pins adapted to engage bayonet-slots in sockets g on the fuselage. The sockets g are simultaneously turned to lock all the spars in position by interconnected levers. Figs. 13 and 14 show the modification in which the fuselage is introduced from above the planes. The fuselage t has a supplementary framing u, and interfitting guide strips x, y are formed respectively on the plane struts s and on the framing t, u. The framing u carries the central portion of the upper plane and has flanges w which are secured to the plane structure by bolts. A modification is described in which the fuselage is slipped into a rectangular opening in the plane structure and secured against longitudinal movement by a forked lever adapted to engage one of the lower spars.

FIG. 13.

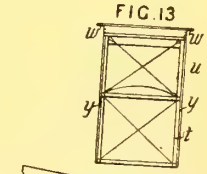
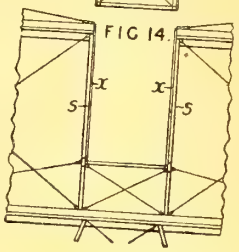
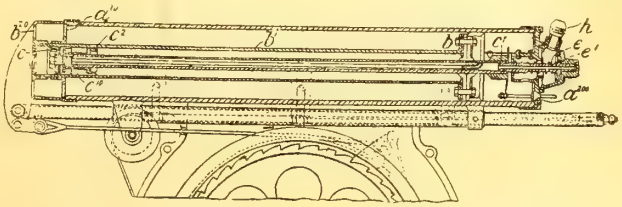


FIG 14.



115,798. Engine turning-gear. Blériot, L., 2, Quai du General Gallieni, Suresnes, France. August 9th, 1917, No. 11469. Convention date, February 28th. Not yet accepted. Abridged as open to inspection under Sect. 91 of the Act.

Compressed fluid, admitted through a conduit h, actuates the piston b and its tubular rod b^1. The space behind the piston b is in communication with the atmosphere by apertures a^{10}, b^{20}. The movement of the piston is transmitted to the engine shaft by a pulley and cord and ratchet arrangement. Near the end of its outward stroke, the central portion of the piston b engages a projection c^2 on a piston c carried by a concentric piston-rod c^1, to which is attached a hollow rod e provided with a valve e^1



The movement of the piston c causes the valve e^1 to cut off the fluid pressure from the piston b, which is simultaneously reduced to atmospheric pressure by the opening of a valve a^{200}. The fluid pressure is then transmitted by the hollow rods e, c^1 and holes c^{10} to the other side of the piston b, thus effecting the return stroke and the resetting of the ratchet device. The release of the valve e^1 is effected by cutting off the compressed-fluid supply.

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THE AIRCRAFT TRADER

MARKET TOPICS.

Prices are for quantities on usual terms.

COPPER.—Home Trade.—The chief feature here has been an advance in price, consequent upon the U.S.A. authorities having agreed to an advance to American producers. The advance on Standard, Electrolytic, and B.S. is £12 per ton; yellow metal also advanced 1d. per lb.; also brass and copper tubes were advanced 1d. per lb. Supplies are satisfactory.

U.S.A. Trade.—There has not been any official statement explaining why the War Industries Board suddenly made up their mind to sanction an increase in the price of copper. Although it is assumed by some producers that the advance dates from July 1st, no official statement confirms that assumption. Also it is not clear whether the advance applies to all orders received after a certain date or to all deliveries made against old contracts and any future contracts. The price position as it stands at present is rather obscure, and needs clearing up. The output figures are quite satisfactory, although the refineries are complaining of labour shortage, and it is expected that the Government will shortly devise means of overcoming this difficulty.

NEW PRICES.

Standard	£122	0	0			per ton
Electrolytic	137	0	0	to 133	0	0 per ton.
B.S.	135	0	0	to 131	0	0 per ton.
Sheets	161	0	0			per ton.
Copper Tubes	20½d.					per lb.
Brass Tubes	17¼d.					per lb.

TIN.—Both American and British consumers are suffering as a result of the speculation which is still prevalent in the Eastern market. The price here has recently been advanced £10, and the difference between the London and American prices is only small, and although Eastern sellers are not quite so reserved it is generally admitted that the whole situation will remain uncertain and obscure until some kind of control is exercised over the Eastern market.

The position in America is very tight indeed, and supplies are anxiously awaited. The demand here continues to increase, and the available supplies do not give cause for optimism.

COMPARATIVE PRICES.

To-day (15th)	£354	0	0	per ton.
Last week	344	0	0	per ton.
Last month	329	0	0	per ton.
Highest price, 1917	309	0	0	per ton.

LEAD.—The whole position remains under Government control, and supplies for national requirements are well maintained.

STEEL.—The output of the various mills continues to give satisfaction, although quite a number of works have been hit very hard by the "clean cut" methods of the military, and all efforts to have the scheme modified, as far as Sheffield is concerned, have not met with any apparent success. Some of the mills have also been disorganised on account of a large percentage of workers having the "flu." Supplies of Aircraft Steels are satisfactory, and there is every indication that the output is now well ahead of the consumption. Prices continue unchanged, although in view of the recent advances in the price of fuel and wages there is bound to be a revision in the near future.

The Admiralty has issued a circular dated June 25th instructing firms engaged on Admiralty contracts how and where they must obtain Steel in future, and firms concerned are advised to obtain a copy of the memorandum from either the Admiralty or the District Steel Superintendent.

TIMBER.—This market is very quiet indeed. The authorities have, apparently, succeeded in driving the merchant out of the scene and the whole situation is under official control. No Silver Spruce has been received recently, and presumably nothing but substitute Timber will be used shortly, and as stated previously this wood has not yet proved to be a success. Very little Mahogany or Walnut has been recently received. The available stocks of the former are, however, fairly large, and there does not appear to be much cause for alarm.

The Plywood situation remains unaltered.

FABRIC.—It is now practically certain that there will not be any shortage of supplies, and it is also gratifying to learn that the flax crop this year is likely to exceed expectations, and unless something unforeseen happens sufficient supplies will be available to meet the demands of the aircraft constructors.

Prices are unchanged.

THE FLAX POSITION.

On July 16th **Earl Stanhope**, in moving the second reading of the Flax Companies (Financial Assistance) Bill, said its object was to stimulate the production of flax. Arrangements had been made for a very considerable extension of the acreage under cultivation in Ireland.

The Bill was read a second time.

TIMBER.

By the Timber Order, 1918, which was issued on July 17th, the Board of Trade have prepared for the introduction of a rationing scheme for imported soft-wood timber, which will begin on July 22nd. A schedule of maximum prices for imported timber will be issued, but will not apply to existing stocks, which will still be subject to the previous regulations as to price. Stocks which under previous regulations may not be sold at prices above those ruling on January 31st, 1917, are to be notified to the Controller of Timber Supplies for his decision regarding the price at which they may be sold. The permit system is extended to home-grown converted timber on lines somewhat similar to those which have for over a year applied to imported soft wood. Other matters dealt with include the position of timber on estates which are about to be sold; also sales of timber by auction and by tender. Particulars of the new form of application for permits for home-grown or imported timber may be had on application to the Controller of Timber Supplies, Branch 2, at 80, Newman Street, Oxford Street, London, W.1.

THE SOPWITH SPORTS.

The sports of the athletic section of the Sopwith Aviation Co., Ltd., will be held at 2 p.m. on Saturday, August 31st, at the Old Kingstonians Football Ground, under the A.A.A. laws.

The proceeds will be devoted to the R.A.F. Convalescent Home.

Many of the events are open to all munition and aircraft workers, and full particulars may be obtained from the Hon. Sports Secretary, Mr. George Appleton, the Sopwith Aviation Co., Ltd., Kingston-on-Thames. All entries close on August 17th.

THE SCEPTRE AVIATION CO., LTD.

One understands that correspondence intended for the Sceptre Aviation Co., Ltd., is still being addressed to the Super Aviation Co., Ltd. It should be noted that the firm now trading under the name of the Sceptre Aviation Co., Ltd., recently changed its style from the Super Aviation Co., Ltd., to avoid confusion with another firm of a similar title.

The directorate and management remain unchanged, and both the liabilities and assets remain the property of the same firm, whose constitution remains unaltered save for the actual change in name.

FIRST AID FOR AN AMBULANCE.

In the usual course of events motor ambulances are intended to go to the rescue of persons who need repairs, but in the same way that the great Judge Daniel himself came to judgment, so occasionally do ambulances require surgical attendance.

Quite recently a volunteer police ambulance, which is used principally for picking up the victims of air raids, saw fit to fracture its aluminium gear-box casing, and was thereby rendered temporarily useless for further operations.

Fortunately, however, there exist hospitals for motor-cars as well as for human beings, notable among the number being the house of Barimar, of Lamb's Conduit Street, W.C. The cracked gear-box, which, as a matter of fact, had broken right across the centre, and was in two pieces, was promptly welded together, and it was then found that the seatings of five steel spindle bushes were badly cracked, in a way which entailed a good deal of labour and skill in order to effect a clean repair.

Incidentally, the main lines of fracture had travelled through two threaded bolt holes which had, therefore, to be re-made, but so accurately was the whole job done that when the gear-box was re-assembled everything fitted accurately without readjustment, and the ambulance is now in good trim for the next air raid.



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COMMERCIAL AERONAUTICS

AIRCRAFT AND MOTOR TRANSPORT.

In continuance of our attempt to consider the comparative merits for commercial aircraft and various alternative forms of transport, we may now endeavour to analyse the position when the alternative to the aircraft is to be found in the shape of road motor services either established or possible. By adopting this course of comparing the aerial services with each other method we may arrive at some fairly accurate conclusions as to whether, in view of the other facilities that could be or are provided, the aerial service stands a good chance of permanent success in any particular instance. As in our attempt to compare aircraft with railways, we shall in this and subsequent articles divide up our consideration of the subject under a series of headings.

COST OF OPERATION.

The horse power required for the carriage of a given load by aeroplane is very considerably greater than that needed for motor vehicles under any circumstances which would allow the latter to be seriously considered at all. Consequently, in the matter of cost of operation, the aeroplane will be at a disadvantage as regards fuel and lubricating oil.

The item of tyres chargeable against a motor vehicle may help to balance this discrepancy.

The wages of a motor driver will, however, be appreciably lower than those of a pilot.

Repairs will be more expensive upon the more powerful power plant of the aeroplane and altogether.

Therefore, we must expect that the cost of operation of the aeroplane will be considerably higher than that of the road motor vehicle, provided always that the system of roads is reasonably complete, and of at least fair quality as regards foundations, surfaces, and gradients.

STANDING CHARGES.

Under the heading of standing charges we must include interest on first cost, which will be higher in the case of the aeroplane.

The biggest item will, however, be depreciation, and here again the aeroplane will be at a disadvantage, since it is a more expensive and less substantial structure. Moreover, the motor vehicle may still be worth running when it has become to some extent unreliable, but lack of reliability on the part of the aeroplane would be fatal.

In making a comparison with motor transport the calculation must be complicated by the fact that in some cases the necessary roads may be available to the motor transport services without charge. In other cases the roads may have to be specially constructed to make motor traffic possible.

In the latter instances, the standing charges per mile run by motor vehicles will be far heavier, particularly if the bulk of the traffic handled is comparatively small.

The point may be best illustrated by taking typical examples.

The standing charges of running a motor service between, say, London and Birmingham would be much lower than the corresponding charges for an aeroplane service, because the road is available for free use and is of good quality.

On the other hand, if we take the case of a port on the African coast from which it is required to create communication with some point two or three hundred miles inland, then the necessary preliminary to communication by motor is the construction of a road, which may involve the construction of bridges and embankments, deep cuttings through rocks, or excessive gradients over steep hills.

Even when once constructed the road may be subject to very expensive maintenance charges. For instance, it may be disintegrated by heat or washed away by violent rains, which may be of periodical occurrence.

In many instances it would be impossible to keep a road fit for use by motor traffic throughout the year. There might be seasons during which it would be impassable. A season of storm or violent rain might necessitate the temporary stoppage both of motor transport and of an aeroplane service, but the aeroplane service could be renewed directly the storm ceased, whereas, in the case of the motor transport, work might then have to be done upon the road before it would be fit for use.

COMBINED STANDING AND RUNNING COSTS.

Thus, under some conditions, it is apparent that so long as the bulk traffic to be handled is fairly light the standing costs of a motor transport service and its road might well be so high as to give the aeroplane service a lead which could not be appreciably affected by any disadvantages as regards operating costs or other factors.

As a rough rule, we may take it that the combined standing and running costs will be lower for the motor vehicle wherever a fairly good road system exists and is free to all.

On the other hand, they will be lower for the aeroplane in almost every case in which the road would have to be specially constructed for motors. Such roads are, in many parts of the world, only constructed for temporary purposes, the idea being to develop the traffic up to a point which will justify a railway.

One can, therefore, see great possibilities of aeroplane services taking over this particular duty from motor vehicles and doing the initial work across unpopulated areas until the inland districts are sufficiently developed to justify rail communication.

When that stage was reached it would remain to be decided whether the aeroplane service should cease entirely or whether a demand would be found to exist for it as an express service. Probably this would not usually be the case, because, in an instance of this sort, the aeroplane services would never be run with an eye to the attainment of extremely high speeds. In fact, the speed would be, roughly speaking, as low as is practicable, in view of the desirability of economising in power and operating costs.

MOBILITY.

In the matter of mobility the aeroplane has one great advantage over motor transport. It can travel over trackless country and equally well over water and land.

On the other hand, there is another form of mobility in which the motor vehicle has an advantage in all civilised countries where roads or passable tracks exist. The vehicle, if suitably designed to meet local circumstances, can pick up its load exactly at the desired point, and again set it down at the desired point.

The aeroplane, on the other hand, must pick up and set down at prepared landing grounds. To take an extreme instance, it cannot pick up a passenger at his front gate and set him down at his office. Neither can it pick up a package of goods from the delivery department of a store in town and set it down at the front door of a customer in the country.

This form of mobility gives the motor vehicle great advantages in any thoroughly developed and civilised country. On the other hand, the motor vehicle has practically no mobility at all where roads do not exist, so that in such undeveloped districts the aircraft by comparison has matters all its own way.

SPEED.

As regards speed, the aeroplane has a substantial advantage over the motor vehicle, though the latter has great capabilities. The advantage rests partly on the fact that arbitrary limits must be set upon the speed of the motor vehicle in the interests of public safety, because that vehicle can only ply where roads exist, and these roads must be kept fit for use by other forms of traffic also.

Thus, so far as capabilities are concerned, the comparison of speeds is all in favour of the aeroplane.

Over short journeys, however, the effective speed of the motor may be superior because, as already indicated, it can travel exactly from door to door. Coupled with this fact, is the advantage possessed by the road vehicle of saving handling of goods, or changes of conveyance by passengers, both of which cause delay, while the former often causes depreciation in the value of the goods carried.

If goods have to be conveyed to the aeroplane starting ground by vehicle, transhipped into the aeroplane, carried to the landing ground at the other end of the journey, and transhipped again before final delivery by vehicle, then the whole time occupied may be greater than that taken up by direct delivery by road.

Much depends on the length of the journey. If the distance is great, terminal and intermediate changes and delays become of comparatively little importance. If the distance is small, then these delays may represent a big proportion of the whole time occupied.

Thus in an undeveloped country the construction of a special road for motors over a distance of ten or twenty miles might be absolutely justifiable, whereas if the distance were two or three hundred miles the aeroplane services ought almost always to be preferred on the ground of speed as well as of standing charges.

FREQUENCY OF SERVICE.

In this matter there is not much to choose. Frequency of service depends on the carrying capacity of the unit employed and, both in the case of the aeroplane and the motor vehicle, we contemplate a passenger carrying capacity varying from two

to about forty, and a goods capacity varying from half a ton up to three or five tons.

The units are, therefore, more or less equivalent and the question of frequency of service will, therefore, not enter into our conclusions.

Punctuality and Regularity.

Assuming the existence of a decent road system, the advantage here would be on the side of the motor vehicle, but where the road system is very bad and the roads are liable to become impassable at certain seasons of the year, the aeroplane service, as already pointed out, may have a preponderating advantage.

As mentioned in a previous article, we must not allow the vagaries of our own climate to weigh too much with us in considering the possibilities of establishing absolutely regular aeroplane services in many parts of the world.

Provisional Conclusions.

A general consideration of all the points mentioned leads to the conclusion that if the distance covered is to be fairly short and roads exist an aeroplane service will only have a chance against a motor service provided that there is a demand for some specially high-speed conveyance. Even so, the aeroplane would not figure successfully for any distance less than about eighty to a hundred miles.

If roads do not exist and have to be specially built, then the chances are that the aeroplane service would be the right thing in the first instance for anything above twenty miles, and under some circumstances for even shorter distances, since the presence of rivers, mountains or inlets or the prevalence of floods may make the road proposition a very nasty one.

One can imagine a huge area of country developed entirely during the early stages by means of aeroplanes and motor vehicles used in conjunction with one another.

Every centre of population as it grew would develop its local road system radiated over perhaps ten miles or so. These centres being far apart, there would be no trunk roads joining them, and the whole of the long distance services would be conducted by aeroplane until the centres had become so large as to justify expensive railway connections.

This would only happen very gradually, and as it occurred the aeroplanes would be moved on to other routes joining up younger and smaller centres to the main centres and so extending the early developments.

The possibilities in this sort of direction are immense and in the opinion of the writer far exceed the more immediately seductive ideas in the nature of the establishment of services between the great towns of Europe.

AERIAL MAIL STATISTICS.

A table has been prepared by the Post Office Department giving details of the operation of the Aerial Mail Service between Washington and New York for the four weeks ending June 15th. It follows :—

Date. May.	Miles Flown.	Hours of Flying. Hrs. Min.	Mail Carried A.	Mail Carried O.	Per Cent. of Performance	Arrived. Wash.	Arrived. N.Y.
15	339	4 07	172½	...	75	2.50	3.37
16	500	6 53	316½	...	75	2.30	2.58
17	570	7 10	41½	60	75	2.35	3.48
18	450	6 40	54½	489	100	3.20	2.52
20	315	3 31	48	256	75	6.46	2.40
21	270	4 22	21½	158	50	3.04	4.45
22	135	2 01	19	49	25	6.30	4.45
23	450	5 27	49	471	100	3.20	2.25
24	450	6 50	55½	551½	100	3.30	2.58
25	450	9 08	46	616	100	7.10	2.34
27	360	5 28	36	373½	75	4.00	2.34
28	450	5 59	48	371	100	3.00	2.32
29	450	8 09	49½	289	100	5.00	3.00
30 (no trips)	...	...	37½	...	...	6.30	2.52
31	135	2 31	12½	55	25	4.50	4.45
June.							
1	360	5 11	37⅝	221	75	4.55	3.25
3	405	5 41	36	253½	75	4.25	2.43
4	450	6 35	37½	463	100	3.20	2.58
5	450	5 58	44½	469½	100	3.15	2.28
6	450	6 06	54	610½	100	4.15	3.40
7	270	4 11	20	272	50	3.55	4.45
8	340	4 55	38	266½	75	9.15	3.05
10	450	6 31	51½	463½	100	4.07	2.35
11	360	6 57	40	219	75	3.45	3.47
12	450	7 46	49	612	100	6.05	3.12
13	450	6 43	45	719	100	3.22	2.54
14	450	6 46	45	524½	100	4.30	2.23
15	450	6 23	37	616	100	3.10	3.10

Note.—Number of hours dead flying for period, 17 hrs. 27 min.

In explanation of the above table, the distance from Washington to Philadelphia is placed at 135 miles and from Philadelphia to New York 90 miles, and as the object of the Department is to get the exact number of miles flown on each trip, whether one, two, three or four legs of each trip have been made, the mileage of partial trips has been included in the figures in the second column.

The actual number of hours and minutes each machine was in the air with mail is given in the third and fourth columns, while in columns five and six A and O indicate the amount of aeroplane and ordinary mail, respectively, carried, the amount in both cases being in pounds.

The percentage of performance in the seventh column is based upon the four legs of a round trip, each leg being valued at 25 per cent., provided the trip is completed by aeroplane and not by train before the close of day.

Of the figures in the last two columns the first show the time of the arrival of the aeroplane from Philadelphia on the trip south and north respectively.

A summary of the table is: Total number of miles flown, 10,659; time in the air, 157 hr. 59 min.; average speed per minute, 1.1245 miles; aggregate mail carried, 10,994⅜ lb., of which 1,542⅝ were aeroplane, and 9,451¾ ordinary mail; average performance, 82.45 per cent.

In a statement the Department says: "Lieut. Edgerton has to his credit 20 perfect flights of 130 miles, never having to make a stop en route, and without damaging a plane. Lieut. Culver, flying between New York and Philadelphia, has 13 perfect flights to his credit, never having to stop en route, and having no damage to his plane. Lieut. Webb has 11 perfect flights to his credit. Lieut. Kilgore made nine non-stop flights and two interrupted flights. Lieut. Bonsal made 15 non-stop and four interrupted flights and one damaged plane. Lieut. Miller made 11 non-stop flights, four interrupted flights, and two planes damaged.

"In view of the success obtained in the first month's operation of the service, and the fact that the capacity of the machines is not being fully utilised, the Department has under consideration a reduction of the postage rate on aeroplane mail."

The Department has under consideration a proposition made by the citizens of Atlantic City, N.J., of linking that place with the Washington-New York route.

Miss Katherine Stinson, who made a postal flight from Chicago to New York the first part of this month, has been engaged to make a similar flight from Chicago to St. Louis, starting on June 22nd.

Extension of the possibilities of the aeroplane postal service between Washington and New York is expected under a revision of rates said to be under contemplation by Postmaster-General Burleson. A reduction from 24 cents an ounce to 16 cents has been recommended, the amount carried thus far having fallen below expectations of officials.

At no time has the capacity of the aeroplanes been taxed, it is said. In the first month five and two-fifths tons of postal matter were transported, but deliveries since have declined.

Under the 16-cent. rate the service is certain to be utilised to the fullest, officials say, since the innovation provides successful competition with the telegraph and telephone service, and will be considerably cheaper.

The only real obstacle so far encountered has been fog along the coast. On bad days fog signals will guide the aviators. Signal stations for this purpose will be established near New York and Philadelphia, Mr. Burleson said.

Mr. Moon, Chairman of the Committee on Post Offices and Post Roads, introduced in the House on June 21st a joint resolution (No. 307), enacting into law H. R. 7237 making appropriations for the Post Office Department for the fiscal year ending June 30th, 1919, as agreed upon by the Senate and House conferees.

The amended Bill carries the appropriation of $100,000 for the aeroplane mail service.

NORWEGIAN AERONAUTICS.

The Norwegian Air Route Company was constituted officially on July 10th at a meeting with M. Mowinckel, President of the Storting, in the chair. The share capital was fixed roughly at £183,000, and the objects were defined as follows :—"To carry on regular routes by means of airships, mails, goods, and passengers." Other air traffic will be considered. The powers of the company are vested in a corporation consisting of men representative of the whole country, of the business community, of politics, and of science. Dr. Nansen was elected president. The board of management will consist of five members, including the managing director and the technical director. M. W. Keilhau, to whose initiative the company owes its foundation, was appointed managing director, and Captain Gyth Dehli technical director.

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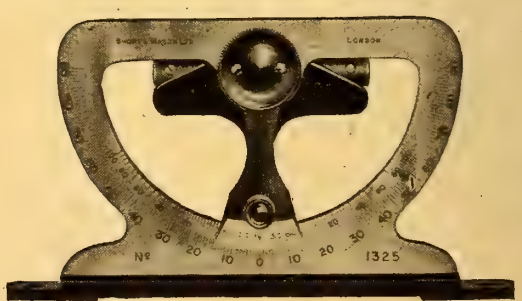
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AIRCRAFT FINANCE

CURRENT TOPICS.

Cheerfulness is the great characteristic of the Financial World just now. So far, at all events, the German offensive has done nothing more than inspire caution in one or two directions where the speculative fever had registered a temperature rather higher than was healthy. Quite a considerable stream of money is flowing into securities for investment, and one cannot fail to notice the increasing attention paid to the shares of British Industrial undertakings.

Why Industrial Investments are Wanted.

This latter is interesting, and is worth investigating. Nowadays, people argue that with the extortion of the tax-gatherer so harsh, they must make their investments earn a higher rate of interest in order to counteract the taxes. It is quite sensible; but, at the same time, a higher rate of interest ordinarily represents a correspondingly higher risk. In this connection some comfort is afforded by the reflection or belief that British Industry will be more virile, more capable of development, and more profitable when the war is over. This is a healthy belief: let us hope it will not prove a miscalculation of the potentialities of British Industry.

Thornycrofts very Active.

There has been a fairly active business in Aircraft and Allied securities. Some prominence has been attained by Thornycroft Ordinary, which have rushed up to 47s. Before the war they were selling at 10s. apiece. But a lot has happened since then, the dividend being now on a 17½ per cent. basis. It is known that the company is glutted with war business of various kinds, and that it must be earning substantially more than this dividend represents. Because of the inability to arrive at a modus vivendi in connection with taxation, the accounts have not been published for a year or two, so that the position is obscure. This just suits the speculators "down to the ground": the imagination can have full play, and Dame Rumour is exercising her inventive abilities.

Aero Shares Firm.

Triumphs remain a strong market, the buying being based on expectation of very satisfactory results. Sunbeams, too, have been wanted. Vickers maintain their recent substantial improvement, although nothing has yet transpired to justify the rumours in circulation. There has been a steady absorption of Armstrong-Whitworths, whose business promises to forge ahead rapidly after the war in the opinion of some people.

Bookkeeping an Art.

Bookkeeping is not merely an exact science; it sometimes comes into the category of the Arts. When there is a war on the genius of the auditor justifies the inclusion of bookkeeping among the Arts. One is prompted to these remarks after a perusal of the accounts of the British Thomson-Houston Co., the big electrical construction engineers, etc., etc.

Goodwill as an Asset.

It has been the common practice—and, unquestionably, it was sound practice—for companies gradually to reduce the credit taken in their balance-sheets for such things as Goodwill, Patents, Licenses, and the like. Sometimes goodwill, as an asset, is really of some value: as often as not its value is very questionable, if not fictitious. In 1916 the British Thomson-Houston Co. had goodwill, patents, etc., figuring at £100,636. There was then written off a sum of £40,636, leaving the item as £60,000. Now it has been decided to restore the item to the original cost of £219,844.

Furthermore, "office furniture and equipment of store-rooms," which had been written down to £1, are to be reinstated, and, pending a valuation, this account now stands at £20,000. It seems extraordinary, but we do not chronicle the event solely for that reason: it may be useful for others.

Comprehensive Banking Fusion.

Just a week ago further banking amalgamations were foreshadowed. It is now stated the Lloyds Bank will absorb the Capital and Counties Bank, and has secured control of the National Bank of Scotland, as well as the London and River Plate Bank. This denotes the latest phase of the amalgamation tendency, which is becoming more comprehensive. If such "community of interests" intends to foster British trade at home and abroad, and not to ride the high horse, so much the better.

Imports of Machinery.

The June Board of Trade returns indicate that the imports of machinery reached £1,139,833, being an increase of £471,790 over June, 1917, and manufactured metal articles other than iron and steel figured at £2,764,443, an increase of £554,330. Exports of machinery were £1,571,980, being a decrease of £46,144.

Profits of Greenwood and Batley.

Satisfactory results are disclosed by Greenwood and Batley in respect of the financial year to March 31st last. The profit is given as £93,000, and being struck after providing not only for the usual prior charges, but also after writing down war capital expenditure and anticipated liability under the Finance Acts, it stands out very well. Seeing that the preceding accounts covered the period from July 11th, 1915, to March 31st, 1917, it is useless to show a comparison.

Value of the Shares.

The dividend is to be 17½ per cent., and as the £10 shares are purchaseable at a little over 14, they represent a yield of over 12 per cent. on the money laid out. It may seem an extraordinarily attractive return on one's money, but before jumping to any such conclusion, it is imperative that due consideration should be paid to the dividend record. For the five years to March, 1913, these ordinary shares were dividendless, the profit-earning capacity of the concern only justifying payment of the fixed dividend on the 7 per cent. cumulative preference shares.

Record of the Dividends.

Admittedly, with such a dividend record, the shares do not appear to be at all undervalued at the present price. They are a 12 per cent. risk. The resumption of dividend payment was made with 5 per cent. in respect of the financial year 1913-4, and for the period from July 11th, 1915, to March 31st, 1917, there was a payment of 25 per cent. The capital of the company is £400,000, of which £140,000 is in the form of preference shares, and £260,000 is in ordinary shares. With the proposed addition of £50,000, out of last year's profits, the reserve fund is increased to £100,000.

Rent of the Cecil.

By the way, the Hotel Cecil Co. and the Government have settled their differences as to the compensation, or, to put it baldly, the rent, the latter must pay for housing the Air Board. This rent, together with the income from offices and shops, is sufficient to meet the interest on the debenture stock, and the fixed dividend on the preference shares. It is estimated, unofficially be it understood, that award is approximately £27,000 per annum.

Austin Motor Company.

At the annual general meeting Sir Herbert Austin, K.B.E. (chairman and managing director), said:—"The operations of the company continue to expand, and during the period under review the following increases have taken place in comparison with the preceding twelve months:—The employees, 125 per cent.; turnover, 97 per cent.; assets, 65 per cent. These extensions have naturally necessitated a proportionately heavy increase in capital expenditure in our works, which we now call the 'South' works, and at the instructions of the Ministry of Munitions we have erected and equipped, at their cost, two very large works adjacent to the South works, which we have named the 'North' and 'West' works. These two works are served by a completely new power unit, boilers, engines, coolers, etc., situated to the east of the North works.

Working at High Pressure.

"Suitable siding and station accommodation for goods and employees has also been provided. These three works have been operating at very high pressure, day and night, during the whole of the period. Some 60 acres of our vacant land are being levelled. The cost of this work has been rather heavy owing to the large amount of material it has been necessary to deal with, but the work is drawing to a close and will certainly provide, when finished, one of the most satisfactory sites in the country.

Post-War Plans.

"Throughout the whole of the period we have endeavoured to keep in view a programme for post-war operations which would enable us to employ and make use of the three works and, as far as possible, all the staff and employees. We have drawn up a definite scheme settled on the various articles we

intend to manufacture, have designed and prepared models, and we are now actively engaged in fixing up suitable relationships with agents and representatives in all parts of the world in which it will be possible to operate when peace is declared. I consider that we have to-day one of the most complete and efficient works organisations in the Empire, and we expect to be able to occupy a very strong and important position in the markets where the sale of the goods we have decided to manufacture will be effected.

A Proud Achievement.

"I regret that the necessary restrictions placed on publishing figures and also the fact that we have not yet reached a settlement of our claims for allowances under the Munitions of War and Finance Acts prevent me from giving full details of our doings, but I feel confident that when the time comes we shall be able to place on record a statement which will in every way satisfy our shareholders and give them reason to be proud of their connection with the company."

NEW COMPANIES.

British and General Aviation Contractors, Ltd.—Private company. Registered July 15th. Capital, £2,000 in £1 shares. To carry on the business of manufacturers, inventors, designers, patentees, warehousers, and dealers of and in aeroplanes, flying machines, airships, balloons, etc. Agreements with Societe Generale Imprese Aeronautiche, of Milan, Italy, of the first part, the Societe Generale l'Industries Aeriennes, of Paris, of the second part. The subscribers (each with one share) are:—H. Woodcock, 34, Lansdowne Road, Walthamstow, clerk; F. Catherine, 67, Sunnyside Road, Chesham, Bucks, publisher. The first directors are to be appointed by the subscribers. Registered office: 43-44, Lennox House, Howard Street, Strand, W.C.

Engineering Proprietary, Limited.—Private company. Registered July 17th. Capital, £100 in £1 shares. Manufacturers of aircraft and component parts thereof, manufacturers of electrical appliances and material, electrical and general engineers, etc. The subscribers (each with one share) are:—C. Nathan, Clanricarde Gardens, S.W., secretary; E. R. White, 29, Malvern Road, Thornton Heath, secretary. The first directors are to be appointed by the subscribers. Registered office: 97, New Bond Street, W.1.

Chas. B. Timperley, Ltd.—Private company. Registered July 12th. Capital £6,000 in £1 shares. To take over the business of a merchant, factor, importer and exporter of cycles, motors, parts and accessories carried on by C. B. Timperley at Birmingham as "Chas. B. Timperley," the "Saltley Cycle Co.," and "Bown's Export and Fitting Department." Power is also taken to manufacture and deal in aircraft and aeronautical requisites. Directors: C. B. Timperley, 166, Portland Road, Edgbaston, Birmingham; Mrs. M. C. Timperley, 166, Portland Road, Edgbaston, Birmingham; C. A. Clarke, 45, Spring Hill Passage, Birmingham. Registered Office: Queen's Chambers, Snow Hill, Birmingham.

Tooting Aircraft, Ltd.—Private company. Registered July 13th. Capital, £10,000 in £1 shares. Aircraft and component manufacturers, makers of electrical appliances, etc. The subscribers (each with one share) are:—W. Foster, 27, Natal Road, Thornton Heath, accountant; F. W. Carter, 33, Bolan Street, S.W.1, aircraft draughtsman. The first directors are to be appointed by the subscribers. Registered office: 91, New Bond Street, W.1.

AN AMERICAN IDEA.

The Curtiss Aeroplane and Motor Corporation has taken a long stride forward in the development of industrial morale by the establishment of a "Square Deal Department" in the Division of Education and Welfare.

The Square Deal Department is for the benefit of all Curtiss employees, whether in factory or office. Its purpose is to apply the square deal to all employees and to the company itself, by removing the causes of any dissatisfaction that may arise and by placing employees in the positions for which they are best fitted.

Any employee who feels that he or she has been unjustly dismissed, overlooked in promotions, assigned to duties for which they are not best fitted, neglected in wage advances, or made the victim, real or imagined, of favouritism by foreman or superintendent, may bring complaint to the Square Deal Department. An investigation is made immediately.

In effect the Square Deal Department is a Court of Appeal. No man or woman may leave the organisation—either their dismissal or desire to quit—until the Square Deal Department has reviewed the case.

Disagreements, misunderstandings, complaints of favouritism, and ordinary dissatisfaction result under the old system in a heavy labour turnover. Companies frequently lose workers with capacities which could efficiently be used in some other department. The Curtiss Square Deal Department thus serves the company no less than the worker through this extension of welfare activities.

[This strikes one as being in embryo of a kind with the Industrial Councils, which Mr. G. H. Roberts, our Minister of Labour, so strongly advocates.—Ed.]

MR. HARRY LAWSON.

At the Central Criminal Court on July 22nd, before the Common Serjeant, Harry John Lawson, 65, and Stuart Alfred Curzon, 42, engineer, who were found "Guilty" at the last sessions upon an indictment charging them with conspiring together to defraud such persons as should be induced to apply for shares in the General Omnibus Supply Manufacturing Company, Ltd., were brought up for judgment. The indictment also charged the defendants with obtaining cheques from three persons by false pretences, and there were counts charging Lawson alone with applying sums of money belonging to the company to his own use or to purposes other than the purposes of the company. In a rider to their verdict the jury said they thought that, although Curzon became a party in the conspiracy, he was to some extent drawn into it by Lawson, and they recommended him to mercy.

The Common Serjeant sentenced Lawson to 20 months' imprisonment in the second division, and Curzon to six months' imprisonment in the second division. Mr. Travers Humphreys, Mr. Cecil Whiteley, and Mr. Comyns Carr prosecuted.

Mr. Patrick Hastings, for Lawson, said he was a man of great ideas. He had practically founded many things which had now become of extreme value—like the safety bicycle and the first motor-omnibus, which he himself drove to the City. Four years ago he was in a ship which was torpedoed, and, as a consequence, both his legs were hopelessly smashed; and they were now bound up in silver splints.

The Common Serjeant, addressing Lawson, said that the jury found him guilty of a very serious, premeditated fraud. He had not the faintest doubt that Lawson brought a good man down with him, and that he was the dominating spirit of the matter.

[For some time Lawson has been endeavouring to get his claws into the Aircraft Industry, fortunately without success. This praiseworthy sentence will, at any rate, keep him out of the way for nearly two years, and so quite a number of simple people may be protected from being robbed.—Ed.]

A WORKS FESTIVITY.

The British Caudron Social and Athletic Club, the President of which is Sir William Ramsay, is holding a sports meeting at Preston Road Sports Ground on Saturday, August 17th, at 2.30 p.m. There are twenty-four events, including six events open to aircraft firms, and it is hoped that the members of other firms who fancy their athletic prowess will pit themselves against the workers of the Caudron Company.

The Sports Committee have invited fifty wounded soldiers, and the Highgate Silver Band will play selections during the afternoon and evening. The sports grounds are near Preston Road Station on the Metropolitan Railway, and tickets of admission, price 1s., may be obtained from the Hon. Secretary, The British Caudron Social and Athletic Club, The British Caudron Co., Ltd., Cricklewood Broadway, N.W.2.

GERMAN PATENTS FOR BRITONS.

The following letter has been received for publication:—

Sir,—There is a difference in principle between buying German goods and selling British goods in Germany. Some amateur patriots who say they will have no dealings of any kind with Germany overlook the damage that our trade would suffer if Germany were excluded from our field of operations after the war. The larger our market, the better for our trade. It is we who benefit most, not the Germans, by our goods having a sale in Germany. Similarly, we are the losers if we buy from Germany. This axiom needs no argument. Hence it follows that a British trader will require the protection of a German patent in many instances.

The Board of Trade has just revoked the general licences which for 2½ years past have enabled British inventors to impart to the enemy full information of new inventions in the form of complete specifications accompanying applications for patents. The enemy patent agents' fees were even paid under these licences. As there was no other way of securing protection in enemy countries, quite a large number of British patentees availed themselves of it. But a far greater number refrained. Unlike the others, these were willing to risk their German rights. But it seemed unthinkable that they should be penalised for their patriotism. So we wrote to the authorities, directly it was announced that no further applications could be either sent to or received from enemy countries.

We are now officially informed that the matter is receiving the consideration of the Board of Trade. Amendment of the patent law is, we hope, in contemplation, by which all applicants for English patents dated July 31st, 1913, and after (who were then legally entitled to apply in Germany up to July 31st, 1914, and later claiming 12 months' priority of date), shall be allowed an extension of time up to six months after the ratification of peace by the Allies.

France and Germany made similar provision two or three years ago, but England, as usual, is behindhand.—Yours faithfully,

(Signed) Stanley Popplewell.

JUNE · 15TH · 1918

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(*Continued from page 294.*)

On the 16th inst. our machines attacked the railway sidings at Thionville. Several bursts were observed on the railway; a large fire was started, and several heavy explosions ensued.

All our machines returned safely.

JULY 18th.—During the night of July 16th-17th our machines bombed the works at Hagendingen (north of Metz) and the Burbach works (at Saarbrücken). Good results were observed and appreciable damage done. A hostile aerodrome was also bombed with good results.

All our machines returned safely.

On the 17th inst. our machines successfully attacked the railway and sidings at Thionville.

All our machines returned safely.

JULY 19th.—Our bombing squadrons were again active during the night of July 18th-19th.

The Benz works at Mannheim, the railway station at Heidelberg, and blast furnaces at Burbach and Wadgassen (north-west of Saarbrücken) were attacked. At the Benz works a fire broke out.

A hostile aerodrome was attacked, one of the hangars receiving a direct hit. Two trains were hit by bombs, brought to a standstill, and then subjected to machine-gun fire.

On the 19th inst. the powder factory at Oberndorf (40 miles south-east of Strassburg) was attacked; bursts were observed on buildings in the factory.

All our machines returned safely.

JULY 20th.—On the night of July 19-20th our bombing machines carried out several air raids.

At Mannheim attacks were made on the Bädische Anilin und Soda Works, the Lanz chemical works, the Gebrüder Guilini chemical factories, and the docks. A fire broke out in the Bädische aniline works, and clouds of smoke rose from the Gebrüder Guilini factories.

Two hostile aerodromes were again bombarded with good effect. Trains and road transport were attacked from low altitudes with bombs and machine-guns.

One of our machines did not return.

On the day of the 20th attacks were made on the railway and factories at Offenburg and Oberndorf. At the former one of the large engine sheds was hit, and at Oberndorf bursts were observed on factories and railways. Our formations were heavily attacked. One hostile machine was destroyed, and two were driven down out of control.

Three of our machines have not returned.

JULY 21st.—As a result of a photographic reconnaissance carried out on the 20th inst. extensive damage is revealed at the hostile aerodrome at Morhange (in Lorraine), attacked on the night of the 19th-20th. One large shed and three hangars were destroyed.

There is nothing further to report.

JULY 22nd.—On the night of July 21st-22nd many successful bomb attacks were carried out by our squadrons.

Over a ton of bombs was dropped on the extensive railway sidings at Lunes, south-east of Mezières.

The Badische-Anilin und Soda factory (at Mannheim) was again subjected to attack and many good bursts were observed in the factory.

In a factory south-east of Zweibrücken a large explosion was caused.

Bombs were dropped on three hostile aerodromes and hangars were seen to be hit.

Low-flying aeroplanes attacked and hit five trains, bringing them to a standstill. Searchlights and anti-aircraft guns were attacked with bombs and machine-gun fire.

All our machines returned.

On the 22nd inst. the important powder factory at Rottweil (on the Necker, south of Obendorff) was attacked. A direct hit was obtained on one of the big sheds, and, as a result, several other sheds in its vicinity blew up. A fire broke out which could be seen from a distance of 60 miles.

All our machines returned safely

THE CASUALTY LIST.

MILITARY.

Reported July 19th.

KILLED.—Fennell, Sec. Lt. F., R.A.F.
Watkins, Capt. L. P., M.C., R.A.F.

DIED OF WOUNDS.—Sales, Lt. N., K.O.Y.L.I. and R.A.F.

DIED.—Alderson, Maj. R. L., R.A.F.

WOUNDED.—Court, Sec. Lt. L. S., R.A.F.; Kennedy, Sec. Lt. N. D. K., R.A.F.; Reynolds, Lt. H. E. A., Suff R. and R.A.F.; Sanders, Lt. H., R.A.F.

MISSING.—Borden, Sec. Lt. H. H., R.A.F.; Dobeson, Lt. G. E., R.A.F.; Pilling, Sec. Lt. J. E., King's (L'pool R.) (T.F.), attd. R.A.F.; Puckridge, Capt. H. V., King's Shrops. L. I. and R.A.F.; Sherwood, Lt. C. L. A., R.A.F.; Story, Sec. Lt. L. C., R.A.F.

Reported July 19th.

KILLED.—Crone, Sec. Lt. L., R.A.F.
Fitzgerald, Lt. R. J., M.C., Glouc. R., attd R.A.F
Hull, Lt. E. P. J., R.A.F.
Messenger, Sec. Lt. L. W., R.F.A. and R.A.F.

DIED.—Balls, Lt. F. W., Suff. R., attd. R.A.F.

WOUNDED.—Cripps, Sec. Lt. A. J., R.A.F.; Daly, Lt. L., R.A.F.; MacBean, Lt. I. B., King Edward's Horse, attd. R.A.F.; Nicol, Lt. W. G. D. H., R.A.F.; Palmer, Capt. S. J., R.A.F.; Perks, Sec. Lt. J. W., R.A.F

MISSING.—Castle, Lt. G. L., R.F.A. and R.A.F.; Davidson, Lt. B. T., R.A.F.; Harrison, Lt. A. H., R.A.F.; McCreary, Lt. H. C., R.A.F.

Reported July 19th.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Holt, Sec. Lt J. L., R.F.C.; Knaggs, Lt. K. J., War. R., attd. R.F.C.; Neale, Sec. Lt. R. E., R.F.C.

Reported July 19th.

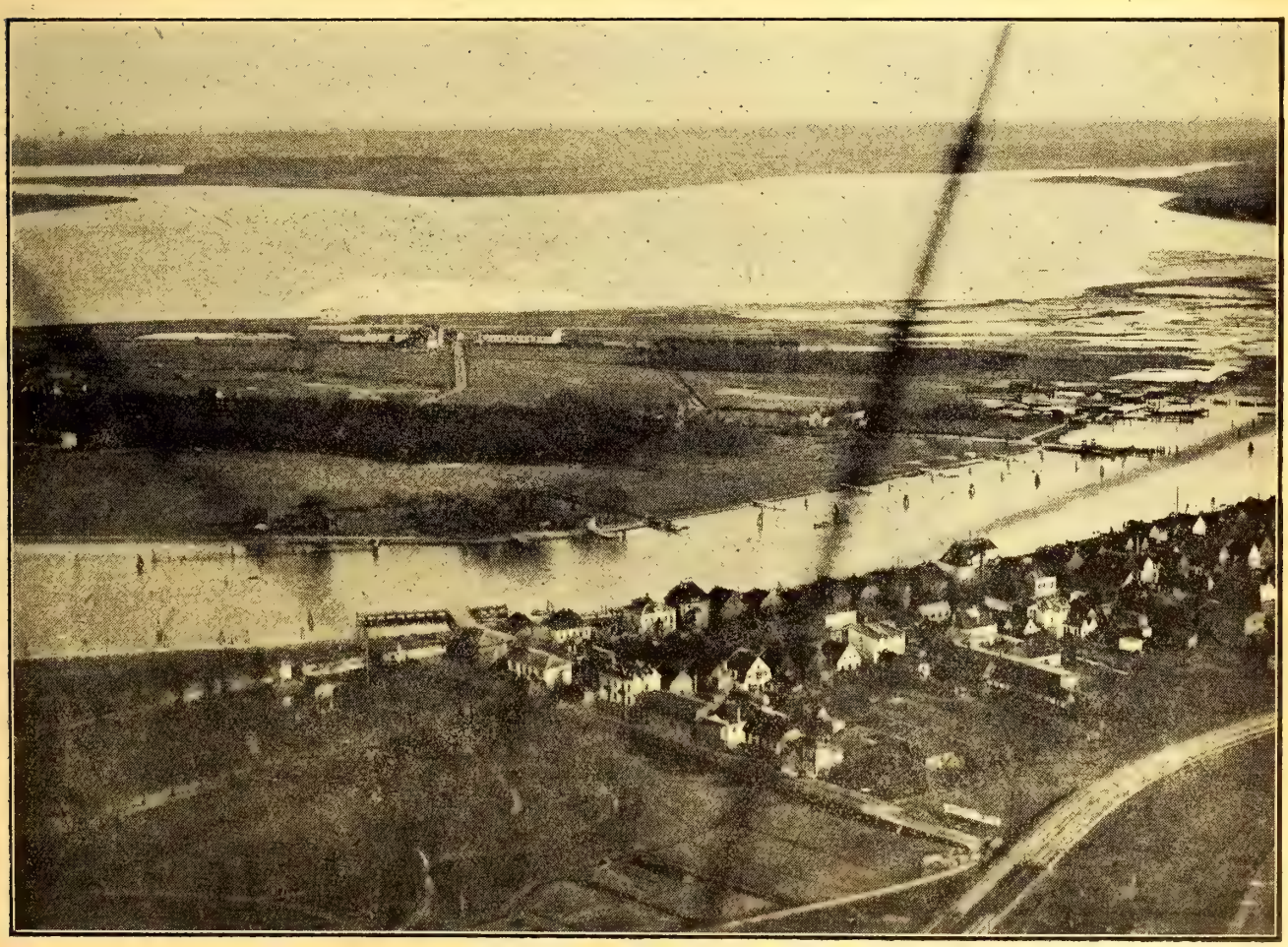
PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Clark, Lt. N., R.F.A., attd. R.F.C.

Reported July 22nd.

KILLED.—Adams, Lt. H. W., R.A.F.
Barker, P.F.O., W. S. G., R.A.F.
Barwick, Sec. Lt. R. L. C., R.A.F.
Burree, Sec. Lt. S. A., R.A.F.
Hand, Sec. Lt. P. A., R.A.F.
McAllister, Sec. Lt. A. J., R.A.F.
Sparks, Sec. Lt. S. W., R.A.F.

DIED.—Bradley, Lt. W. R., West Riding Regt. and R.A.F.

WOUNDED.—Clark, Sec. Lt. F. W. P., Ox. and Bucks L.I., attd. R.A.F.; Dew, Sec. Lt. E. A., R.A.F.; Gill, Lt. F. A., Northants R. and R.A.F.; Morey, Lt. G. W., R.A.F.; Pryce, Lt. H. E., R.A.F.; Sweny, Sec. Lt. G. W., R.A.F.; Wilson, Sec. Lt. A. E., R.A.F.



A view of the D.F.W. Flying School at Lübeck, where German naval pilots are trained.

MISSING.—Atkinson, Sec. Lt. C. H., R.A.F.; Frank, Sec. Lt. H. R., R.A.F.; Fricker, Lt. A. J. R.A.F.; Knowles, Sec. Lt. W., R.A.F.; McKay, Lt. J. T., R.A.F.; Sutherland, Sec. Lt. A. M., R.A.F.

Reported July 23rd.

AUSTRALIAN FORCE.—WOUNDED.—Blundell, Lt. G. R., F.C.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONER IN GERMAN HANDS.—Rackett, Lt. A. R., F.C.

AIR FORCE.

Reported July 18th.

KILLED.—Gatecliff, Sec. Lt. J. N., R.A.F.
Millar, Lt. D., R.A.F.
Osborne, Sec. Lt. G. W., R.A.F.

DIED.—Willis, Maj. E., R.A.F.

WOUNDED.—Gibson, Sec. Lt. J. W., R.A.F.; Goddard, Sec. Lt. H. G., R.A.F.; Howitt, Lt. D. H., R.A.F.; McGregor, Lt. A., R.A.F.; Wridgway, Sec. Lt. C. W., Middx. R., attd. R.A.F.

MISSING.—Boe, Sec. Lt. D., Sher. For., attd R.A.F.; Eaton, Lt. C., R.A.F.; Lindley, Lt. B. L., M.C., R.A.F.; Sydie, Lt. J. E., R.A.F.; Tatnall, Sec. Lt. E. W., R.A.F.; West, Sec. Lt. J. P., R.A.F.; Whyte, Sec. Lt. R. P., R.A.F.

AUSTRALIAN FORCE.—DIED.—Bartley, Sec. Lt. R. V., F.C.
Thompson, Lt. G. R., F.C.

Reported July 23rd.

KILLED.—Appleby, P./F./O. E. A., R.A.F.
Boole, Sec. Lt. J. O., R.A.F.
Cattle, Lt. F. L., R.A.F.
Mecaskill, Sec. Lt. G. H., Essex R. and R.A.F.
Morrison, Sec. Lt. E. S., R.A.F.
Pascoe, Lt. C. R. W., R.A.F.
Standring, Sec. Lt. W. M., R.A.F.
Taylor, Lt. M. S., R.A.F.

DIED OF WOUNDS.—Wadsworth, Sec. Lt. L., R.A.F.

WOUNDED.—Booth, Sec. Lt. S. C., R.A.F.; Cheetham, Sec. Lt. F. W., Manch. R. (T.F.), attd. R.A.F.; Douglas, Lt. J., R.E. and R.A.F.; McCallum, Sec. Lt. J. S., R.A.F.; McDonald, Lt. D. A., R.A.F.; Smithells, Sec. Lt. A. K., R.A.F.; Twohey, P./F./O. W. F., R.A.F.; Wald, Lt. A., R.A.F.; Wise, Sec. Lt. W. F. M., R.A.F.

MISSING.—Bray, Sec. Lt. C. I., R.A.F.; Harrington, Lt. J. R., R.A.F.; Hillis, Lt. B. S., R.A.F.; Saunders, Sec. Lt. W. J., R.A.F.; Tuckwell, Lt. H. A., R.A.F.

Reported July 24th.

KILLED.—Ashby, Sec. Lt. M. G., R.A.F.
Bray, Sec. Lt. H. E., R.A.F.
Durant, Lt. W. E., R.A.F.
Henderson, Lt. G. A. F., Gord. Highrs. and R.A.F.
Lamb, Lt. H. A., Res. Cav. Regt. and R.A.F.
Teetzel, Sec. Lt. H. D., R.A.F.
Weight, Lt. J., R.A.F.

WOUNDED.—Hagley, Sec. Lt. R. E., R.A.F.; Lange, Lt. O. J., R.A.F.; Naish, Lt. J. P., R.A.F.; Stead, Sec. Lt. W. A., R.A.F.; Travers, Sec. Lt. H. D., R.A.F.

MISSING.—Michell, Lt. P. C., R.A.F.; Rickie, Lt. H. H., R.A.F.; Wilson, Sec. Lt. H. L., R.A.F.

CASUALTIES AMONG N.C.Os. AND MEN.
THE DATES ARE THOSE OF THE OFFICIAL LIST.

KILLED.

JULY 15th.—Flexman 242568 Pte./2 W. E. (Worcester).

DIED OF WOUNDS.

JULY 15th.—Novis 218254 1st Air Mech. A. J. (Tooting, S.W.).

WOUNDED.

JULY 15th.—Hegarty 58303 2nd Air Mech. J. (Poplar, London); Hookway 61856 1st Air Mech. S. (Bideford); McNello 115249 3rd Air Mech. P. (Darlington); Smith 63136 2nd Air Mech. J. A. (Newcastle-on-Tyne); Taylor 402670 Serjt. E. (Birmingham); Tidey 82120 Serjt. P. S. (Camberwell); Turner 401675 1st Air Mech. H. (Heywood, Lancs); Weedon 9153 1st Air Mech. C. J. A. (Camberwell).

MISSING.

JULY 15th.—Wentworth F25673 Pte./1 D. (Gillingham, Kent).

JULY 17th.—The following soldiers, who were prisoners in Germany, have arrived in Holland for internment:—
R.F.C.—Attwater, 2202 S.; McMaster, 1840 D.

PERSONAL NOTICES.

NAVAL.

DEATHS.

ALDERSON.—Maj. Reginald L. Alderson, R.A.F., who died on June 30th, in his 39th year, at a naval hospital, was the youngest son of the late Canon Alderson. He was educated at Winchester, and joined the armoured cars as armament officer in the first year of the war. He became attached R.N.A.S., and subsequently served at two Air Stations in this country in the same capacity. He obtained his pilot's certificate in 1917, and was just about to train as a ferry pilot when he was taken ill. He was much esteemed by his brother officers, and was popular with all.

BELL.—Lt. E. V. Bell, R.A.F., aged 19, only son of Mr. and Mrs. E. T. Bell, of 1, Alma Square, St. John's Wood (formerly of Shooters Hill), who was reported missing on May 14th, and is now reported as having been killed on that date, was a Grecian of Christ's Hospital, captain of Middleton B, winner of the Thompson Gold Medal for Mathematics in 1916, the Lamb Essay Medal, 1917, and a Mathematical Scholarship at Trinity College, Cambridge, in 1917. He was a fine forward in the first XV.—awarded honours cap—and a strong runner, winning in 1916 the steeplechase, open mile, half, and quarter mile. On leaving school he joined the R.N.A.S. and was attached as a scout pilot to a fighting squadron. He is reported to have been most popular with officers and men and to have shown great courage and coolness in difficult situations.

SIMMS.—Capt. Arthur Leslie Simms, D.S.C., R.A.F., aged 20, who was killed on July 14th while flying, was the youngest son of Mr. and Mrs. G. F. Simms, The Farlands, Stourbridge. Educated at the Lickey Hills School and Malvern College, on June, 1916, he was granted a commission in the R.N.A.S. In October, 1917, he was awarded the Distinguished Service Cross for valuable services in home waters, and was promoted to flight-lieutenant. Afterwards he became on instructor, and later he was transferred to the Experimental Construction Department. Since the formation of the Royal Air Force, he had made several applications for service at the front, and at the time of his death was expecting orders to proceed there.

ENGAGEMENTS.

BRIGGS—LONG.—The wedding will take place on Saturday next, July 27th, at St. Michael-le-Belfrey, York, at 2.30 p.m., of Colonel E. Featherstone Briggs, D.S.O., R.A.F. (late Wing-Comdr., R.N.), with Violet, daughter of Mrs. Ernest Long, of 35, St. Saviour's Gate, York.

HOLMAN—BROWN.—A wedding will take place between Surgeon Alec George Holman, R.N., attd. R.A.F., second son of the late Frank Holman and Mrs. Holman, of Westbury-on-Trym, Bristol, and Grace Kathleen, fifth and youngest daughter of the late Charles N. Brown and Mrs. Brown, of The Elms, Southtown, Great Yarmouth, at 1.15 on Thursday, July 25th, at the parish church, Great Yarmouth. No invitations have been issued, but all friends will be welcome at the church, and afterwards at The Elms, Southtown.

MILITARY.

DEATHS.

BAINBRIDGE.—Lt. Eric Bainbridge, R.F.C., who was reported missing as long ago as Sept., 1916, is now officially reported dead. He was 18 years of age, and was the youngest son of the late Reginald Newton Bainbridge, of Assam, and Mrs. Emily Bainbridge. He was educated at the Victoria College, Jersey, where he was a member of the O.T.C., and he also belonged to the Essex Volunteer Regiment. He obtained a commission in the R.F.C. in April, 1916, and in September of the same year, when on patrol duty abroad with two other machines, encountered a superior enemy squadron. Mr. Bainbridge was seen to attack four of them, but in his turn was attacked by two others and brought down in the enemy lines.

BLOUNT.—Sec. Lt. John Hillier Blount, Oxford and Bucks L.I. and R.A.F., who died of injuries received in a flying accident on July 6th, was the second son of the late Maj. C. H. Blount, R.A., and Mrs. Blount, of Felixstowe. He was born at Ipswich in 1899, and was educated at St. Andrew's, Southborough, and Harrow, where he was in Mr. Graham's house. From Harrow he went to Sandhurst, and from there received his commission in the Oxford and Bucks L.I., being shortly afterwards seconded to the R.A.F. He showed much promise as a scout pilot.

CHESTER.—Lt. Ronald Henry Venn Chester, who was killed in an aeroplane accident at Stamford, Lincs., on July 13th, was the younger son of John Hough and Amy Chester, of Harrow-on-the-Hill. He was 20 years of age, and was educated at Merchant Taylors' School, where he was a mathematical scholar, and had also gained a senior classical scholarship. Leaving there with a Richard Hilles Scholarship, he gained an open mathematical scholarship at Brasenose, Oxford. He was also captain of the school cricket eleven in 1915 and 1916, and had been a member of the first Rugby XV. for three years. On entering the R.F.C., he became a skilful flier, and was made instructor—a post which he retained to the end, though he had applied to be sent to the front.

DANBY.—Capt. C. D. Danby, M.C., R.F.C., was killed while flying in England on July 18th. The machine suddenly nose-dived from 300 feet and caught fire on hitting the ground. A mechanic who was flying with Captain Danby was also killed

A friend writes the following appreciative notes:—

Charles David Danby I first met in Paris in 1910, when he was mainly interested in motor-cars and their weird ways. He visited Issy-les-Moulineaux several times, and like so many of his age and tastes wished to learn to fly. For many reasons this was not possible at the time, and he had to devote himself to other means of livelihood far less enthralling.

In the following year he was at Eastchurch for some months, where with characteristic quietness he watched all that was passing, but here too he was unable to achieve his desire.

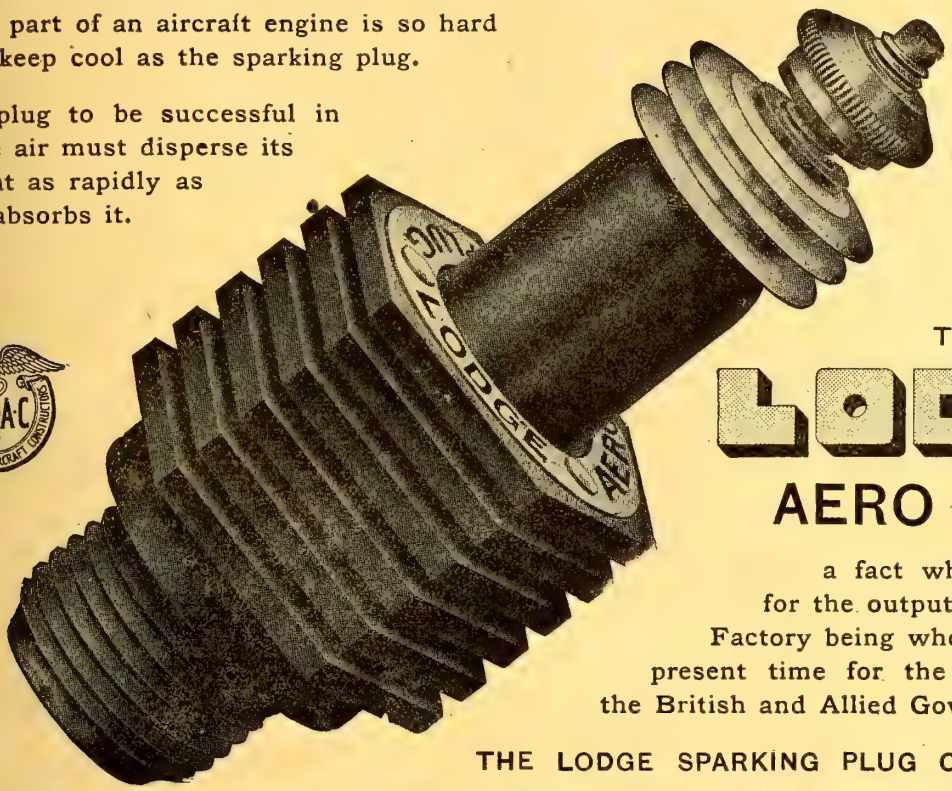
A year or two later he entered the service of the Egyptian Government, and was out of touch with aeronautics until the outbreak of the present war brought him back to England. In December, 1914, he joined the Tyne Electrical Engineers (T.F.) as a second lieutenant. After a few weeks' service with his unit he became attached to the Royal Flying Corps with which he went to France at the end of 1915. He was awarded the Military Cross in the spring of 1916, and was promoted flight commander shortly afterwards. He specialised while with the R.F.C. on photographic work, and had many fine achievements in this important branch of military aeronautics to his credit. At the time of his death he was on Home Service.

It is not possible to sum up Charlie Danby's character in a short sketch. He was a descendant of David, the French artist, whose fame was great in post-revolutionary days in France, and his family had many members of brilliancy and intellect.

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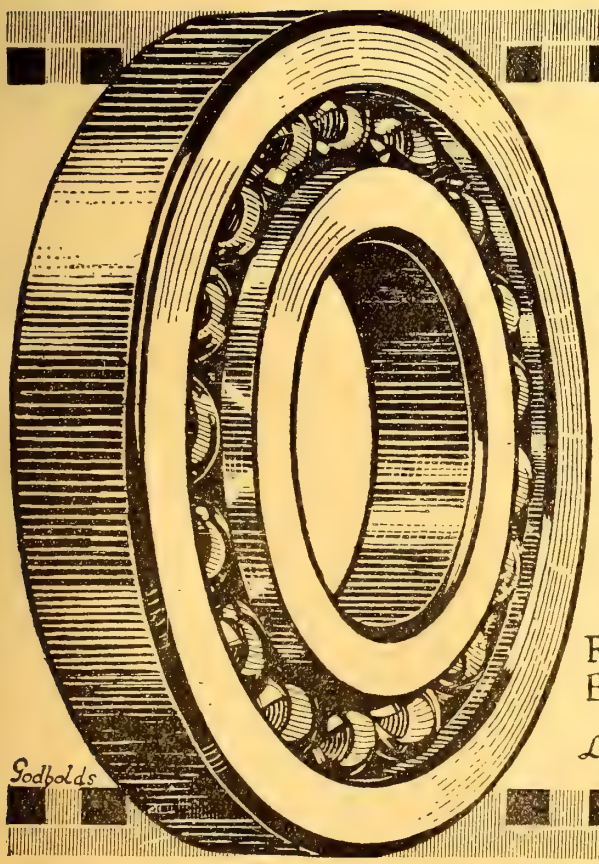
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Godbolds

He wrote with some skill and had a deep interest in modern mysticism. But his kindness of heart was that which endeared him to all who knew him well. Thoughtful acts of sympathy towards those who had found the earth a hard place in which to live filled his days and there are many who have attained success to-day mainly because at some sad stage of their lives Charlie Danby was at hand to give them ready and ungrudging help.

He served his King well and truly, and he has died in the Service he loved so well. He has left no enemies. One can say no higher thing of any.

EALAND.—Sec. Lt. A. Noel Ealand, R.A.F., who was accidentally killed on July 15th while flying at the front, was the son of the late Charles Winn Ealand, of Kirkby Lonsdale. He was educated at Shrewsbury, and became a solicitor. At the time of his death he was in partnership at Thetford, Norfolk. After serving for two years with the Red Cross in France, he obtained a commission in a Dragoon regiment, but subsequently transferred to the R.A.F. Wireless Section. He married, in 1910, Miss E. Augusta Horwood, daughter of Lt.-Col. T. Horwood, of Aylesbury, and leaves a widow and three sons.

FERGUSON.—At an inquest at Barking, on July 16th, on the body of Lt. Bruce Ferguson, Canadians and R.A.F., evidence was given that while flying over the Thames, his machine fell into the river, and he was drowned.

FORD.—Sec. Lt. Norman Stanley Ford, M.C., the Queen's Regt., attd. R.A.F., who was accidentally killed whilst flying in Wiltshire on July 19th, was the only son of S. H. and F. E. Ford, of Tarquah, Gold Coast Colony and 9, Eliot Hill, Lewisham. He was 21 years of age.

GABELL.—Capt. Douglas Ridley Clunes Gabell, Gloucester Regt., attd. R.A.F., who was killed in a flying accident on July 12th, was the sixth son of the Rev. A. C. Gabell and Mrs. Gabell, of Battledown Gates, Cheltenham. He was born at Cheltenham in 1898, and was educated at Cheltenham College, proceeding in 1916 to Sandhurst, whence he obtained a commission in the Gloucester Regt., being attd. to the R.F.C. After only three weeks' training, he proceeded as a pilot to the front, where he saw considerable service, being twice brought down. On the second occasion he was wounded, and he was invalided home in the spring of 1917. He had repeatedly since then applied to return to the front, but his services as an instructor were required at home, where he was Wing Examiner in a large aerodrome in the South of England.

PERRIS, WRIGHT, and WILSON.—As the result of a collision between two aeroplanes on July 20th, when in mid-air, three officers lost their lives. Sec. Lt. Thomas Wright, R.A.F., and Sec. Lt. Noel Perris, R.A.F., were killed, and Lt. Wilson, R.A.F., was so badly injured that he died in hospital the following morning.

Sec. Lt. Noel Perris, R.A.F., was the only son of Mr. G. H. Perris, the war correspondent of the "Daily Telegraph" and the "Daily Chronicle," with the French armies. He joined up in 1914, and served in France and Egypt. He was badly wounded at Hebuterne in 1916. After he recovered he transferred to the Royal Flying Corps, and became a pilot.

SELLARS.—Lt. Herbert Whiteley Sellars, M.C., R.A.F., aged 22, who, at first reported missing, is now reported killed on May 15th, was the second son of Mr. and Mrs. Frank Sellars, of Wentworth, Hoylake. He was educated at the Leas, Hoylake, and Loretto School, Musselburgh, and was entered for Gonville and Caius College, Cambridge. He was given his commission in the R.F.C. in June, 1916, after winning his wings. He was awarded the M.C. in June in recognition of work which was described in the "London Gazette" of June 22nd:—

Whilst on offensive patrol he attacked a hostile two-seater machine, which dived vertically and eventually crashed. Having attacked another two-seater machine, which dived down over the enemy's lines, he engaged three hostile scouts, at the nearest of which his observer fired two bursts at 75 yards range, causing the enemy machine to crash down in flames. His skill and gallantry have been most marked.

WEBB.—Lt. Paul Frederic Hobson Webb, R.A.F., the eldest son of Mr. and Mrs. W. Trego Webb, 7, Scarsdale Villas, Kensington, was killed in action on July 7th. Mr. Webb was born on October 20th, 1899, and was educated at Bishop's Stortford College. He joined the U.P.S. Brigade in September, 1914, and in November, 1915, left for the front, where he did good work as a bomber. He returned to England on sick leave in May, 1916, and, after qualifying for a commission, went again to the front as an observer a year later. In August, 1917, in a fight single-handed with seven enemy scouts he was shot through the left hand, and was sent to hospital in England. There he recovered sufficiently to return to the front in June of the present year. On July 7th he had started on a bombing raid when his machine nose-dived, and he and his pilot were killed.

Engagements.

MINCHIN—WHITE.—An engagement is announced between Lt. Col. F. F. Minchin, D.S.O., M.C., R.A.F., second son of Major-Gen. F. F. Minchin, C.B., and the late Margery Minchin, of Annagh, Co. Tipperary, Ireland, and Holywell House, Bishops Waltham, Hampshire, and Margarita Beatrice (Rita), only daughter of Mr. and Mrs. White, of The Poplars, Maidstone.

KENNEDY-COCHRAN-PATRICK—GROSS.—The marriage arranged between Maj. C. Kennedy-Cochran-Patrick, D.S.O., M.C., Rif. Bde. and R.A.F., son of Capt. and Mrs. Kennedy-Cochran-Patrick, Ladyland, Beith, Ayrshire, and Ella, daughter of Mrs. Sydney Gross, 55, Green Street, Park Lane, will take place at St. Mark's, North Audley Street, on July 27th.

Marriages.

McBAIN—DAVIS.—At St. Peter's, Eaton Square, W., the marriage took place July 22nd between Major R. B. R. McBain, M.C., Croix de Guerre, R.F.A. and R.A.F., second son of the late George McBain and Mrs. McBain, of Shanghai, and Miss Vera Davis, only daughter of the late Major J. W. H. Davis, of Aldershot. The best man was Viscount Exmouth, Royal Berks Regiment and R.A.F. The bride was given away by Mr. E. McKay Edgar.

BAILEY—STEVENS.—On July 15th, at St. Gabriel's, Warwick Square, S.W., Maj. G. C. Bailey, D.S.O., R.A.F., was married to Phyllis, youngest daughter of Sir John Stevens, I.C.S. (retd.), of 2, Lansdown Place West, Bath.

BURMANN—PEARCE.—On July 11th, at the Church of the Holy Ghost, Nightingale Square, Lt. A. H. Burmann, A.S.C., attd. R.A.F., younger son of Mr. and Mrs. Burmann, Bedford Park, W., was married to Mary Kathleen, youngest daughter of Mr. and Mrs. Pearce, 77A, Nightingale Lane, S.W.

CHURCHMAN—GREVILLE.—On July 17th, at All Saints, Putney Common, Allan R. Churchman, D.F.C., R.A.F., son of the late Andrew Churchman and Mrs. Churchman, of Hammersmith, was married to Doris, youngest daughter of Mr. and Mrs. Edward Greville, of Putney, S.W., by the Rev. Canon Rivington, M.A.

Births.

BOURKE.—On July 13th, in a nursing home at Birmingham, Irene (*née* Ashhurst), wife of Col. Ulick J. D. Bourke, Oxf. and Bucks L.I. and R.A.F.—a son.

GAYE.—On July 17th, at Haarlem, Holland, the wife of Capt. A. D. Gaye (Bedfordshire Regt. and R.A.F.), of a daughter.

MUSGRAVE.—On July 16th, at East Grinstead, to Maj. Herbert Musgrave, D.S.O., R.E. (who was killed in action June 2nd, 1918), and Mrs. Musgrave—a son.

PORTER.—On July 13th, at 5, Lennox Road East, Gravesend, the wife of Capt. H. A. Porter, R.G.A. and R.A.F., of a daughter.

AIR FORCE.

Deaths.

CALVERLEY.—Sec. Lt. Osbert Leveson Calverley, R.A.F., who was accidentally killed while flying in England on July 12th, was the younger son of Major and Mrs. E. Leveson Calverley, of Oakville, Ontario. He was 19 years of age.

CARVER.—Lt. Robin Creswell Carver, R.A.F., late of Benha, Egypt, was killed in a flying accident in England on July 17th.

FRONEMAN and BEACHCROFT.—Capt. E. Froneman, R.A.F., of South Africa, and Lt. W. F. Beachcroft, R.A.F., were killed while flying in Berkshire on July 21st.

GRAHAM and DUNCAN.—At an inquest in Hertfordshire, on July 17th, on the bodies of Cadet Vernon William Graham, R.A.F., aged 24, of Canada, and Sec. Lt. Robert Ronald Duncan, R.A.F., aged 21, of Scotland, it was stated that on July 16th another officer was compelled to make a descent into a cornfield. An hour later two machines, piloted by Mr. Cadet Graham and Mr. Duncan, approached from opposite directions at a height of 1,000 feet. They were probably curious to ascertain what had happened to the other machine. Both dived, and came into collision, and, becoming locked, they fell to the ground. The death of both officers was instantaneous. A verdict of "Accidental death" was returned.

JENKIN.—Lt. W. W. Jenkin, R.A.F., was the only son of Maj. and Mrs. W. A. Jenkin, of Liskeard, Cornwall. He was educated at Blundell's School, Tiverton, and went from there to Sandhurst. He was gazetted to the Duke of Cornwall's L.I. in August, 1916, and joined a battalion of that regiment at the front in the following October. He was stationed for nearly a year at a prisoner of war camp, and afterwards was accepted for the R.F.C. Having completed his training in England, he returned to the front in April receiving his promotion to lieutenant shortly after.

JONES.—2nd Cl. Air Mechanic William Jones, R.A.F., was found drowned in Basingstoke Canal. It is thought that he accidentally walked into the water on the night of July 16th.

Engagements.

ATKINSON—ROWAN.—A marriage has been arranged, and will take place at the Old Parish Church, Ayr, at 2.30 on Aug. 14th, between Capt. Edward D. Atkinson, D.F.C., R.A.F., son of the late J. H. Atkinson, of Calcutta, and Nancy, second daughter of Mr. and Mrs. David Rowan, Dunskaig, Ayr, Scotland. No invitations are being sent, but all friends will be welcome at the church.

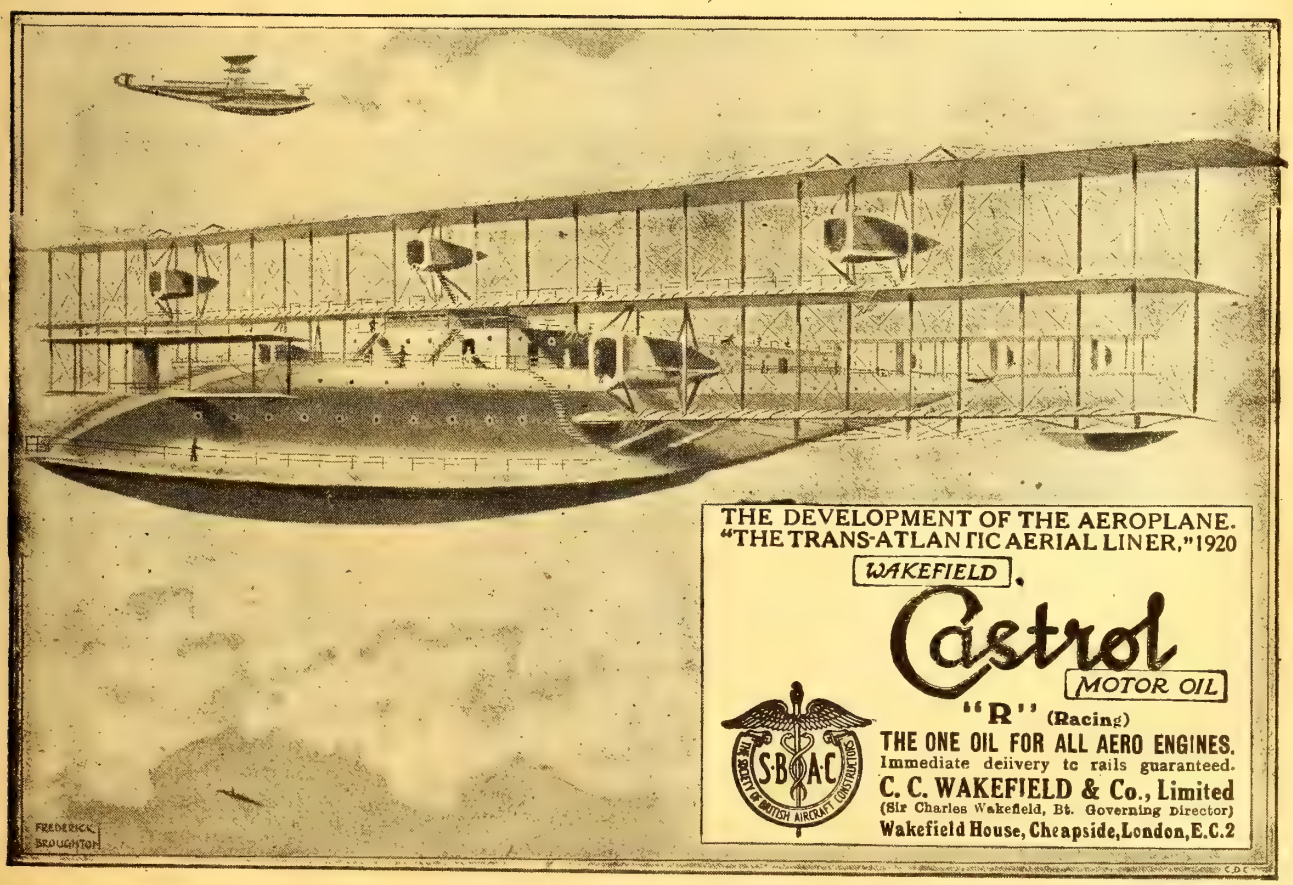
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COOK—UTTERSON-KELSO.—The marriage arranged between Lt. W. Wallace Cook, R.A.F., second son of Mr. and Mrs. William Cook, of Palmerston North, New Zealand, and Charlotte A. D. Utterson-Kelso, youngest daughter of the late Capt. W. E. Utterson-Kelso and Mrs. Utterson-Kelso, of Brafferton Hall, Helperby, York, will take place at the end of this month, leave permitting.

DARKE—GARLAND.—The marriage arranged between Private Harold Darke, R.A.F., and Miss Dora Garland will take place at St. Michael's Church, Cornhill, E.C., on Thursday, July 25th, at 1.30. There will be no reception, but friends will be welcome at the church.

FIELDING—McCALLUM.—The marriage arranged between Sec. Lt. G. B. Fielding, R.A.F., son of the late Rev. G. F. M. Fielding, Stoke Wake, Dorset, and Dover, and Esmé, youngest daughter of the late Outram Kellie McCallum and Mrs. Kellie McCallum, Monowai, Fleet, Hants, will take place quietly in London on Aug. 10th.

POLLARD—CHEETHAM.—An engagement is announced between Capt. G. R. Pollard, R.A.F., youngest son of Sir George Pollard, M.P., and Lady Pollard, of Southport, and Miss D. Cheetham, daughter of Mr. and Mrs. John A. Cheetham, of Brighouse.

Marriages.

CROSBY—WILLIAMS.—On July 11th, at St. Albans, Bedford Park, R. R. Crosby, Lieut., R.A.F. (Gunnersbury) was married to Muriel Grace Williams (Chiswick Park).

FAUCETT—BARR.—On July 18th, at All Saints', Warlingham, Sec. Lt. the Rev. Lawrence William Faucett, B.A., B.D., R.A.F., Rhodes Scholar, son of Mr. and Mrs. I. L. Faucett, Chattanooga, Tennessee, U.S.A., was married to Mariel Grace Margaret, daughter of the late Mrs. Barr and of Mr. James Barr, The Authors' Club, by the Rev. G. R. Macaulay, Vicar.

GROVER—PATTERSON.—On July 17th, at Holy Trinity Church, Ryde, Isle of Wight, Lt. George W. M. Grover, R.A.F., was married to Josephine W. (Joan) Patterson, younger twin daughter of Mr. and Mrs. W. R. Patterson, of Sorrento Lodge, Ryde.

NOWELL—HEWETT.—On July 18th, at St. Martin's-in-the-Fields, Capt. Norman Nowell, R.A.F., only son of H. M. Nowell, of Norton-on-Tees, was married to Joyce, youngest daughter of Mr. and Mrs. F. Hewett, of Hythe, near Southampton.

RUTTER—BELCHAMBER.—On July 20th, at The Friends' Meeting House, Westminster, Sec. Lt. Joseph John Burchett Rutter, R.A.F., son of Mr. and Mrs. Clarence Rutter, of Wincanton, Somerset, was married to Christine Sophie, daughter of Mr. and Mrs. S. C. Belchamber, Church House, Taybridge Road, S.W.11.

SMYTH—GILBERT.—On July 15th, at St. Matthew's Church, Westminster, Lt. Ernest B. Smyth, R.A.F., eldest son of Mr. and Mrs. F. Buxton Smyth, Overbury Avenue, Beckenham, was married to Lina, eldest daughter of Mr. and Mrs. J. C. Gilbert, of 35, Binfield Road, Clapham.

STILES—THOMSON.—On July 8th, Charles Delmé Brereton Stiles, R.A.F., of South Africa, was married, by special licence, to Nana Lyall, only daughter of the late Andrew Thomson, Writer, Kirkwall, Orkney, and Mrs. Thomson, of 181, Kenmure Street, Pollokshields, Glasgow.

Births.

ADDINSELL.—On July 19th, at Harrow Weald Lodge, Middlesex, the wife of Capt. Jack Addinsell, R.A.F., of a son.

TYRRELL-WAITT.—On July 16th, at 23, Waldgrave Gardens, Upminster, Essex, the wife of Lt. Tyrrell-Waitt, R.A.F., of a daughter.

* * *

Sec. Lt. Robert Gresham Carr, R.A.F., son of Mr. Robert Carr, of the Elms, Berwick, who was taken prisoner by the enemy on June 21st, when over the German lines, has escaped and rejoined his unit.

* * *

Will friends of prisoners of war at Denain, Fuestenburg, or Aachen, kindly make inquiries concerning Lt. E. Pell Edmonds, R.A.F.?—The information will be gratefully received by Mrs. Edmonds, 17, Chaucer Road, Bedford.

FOREIGN COMMUNIQUES.

FRANCE.

July 17th.—Our Air Service has taken an important part in the battle engaged since July 15th on the front of the Marne and Champagne.

In spite of unfavourable atmospheric conditions, our observers did not cease to fly over the German lines during the days preceding the attack. Thanks to their sustained vigilance, they managed to furnish valuable information with regard to the offensive, and to indicate its extent.

During the first hours of the battle our aviators intervened actively, notably on the Marne. In spite of the thick curtains of smoke which hid the bridges thrown across by the enemy, our crews discovered them, and attacked them, flying at a low altitude. They succeeded in destroying by bombs two of these bridges loaded with troops, who were hurled into the river, while attacks with machine-guns and bombs were showered on convoys and columns debouching on the north bank. Fourteen tons of projectiles were used in this way during the day at various points of the front with complete success, and the attacks were continued during the night. Fourteen tons of projectiles dropped on the enemy's bivouacs and points of assembly and concentration caused several fires and much damage.

Our aviators, in addition, fought a hard battle against the enemy's Air Service, and obtained good results. Forty-one enemy aeroplanes were shot down or driven down out of control, and nine captive balloons were set on fire. In less than five minutes Sub-Lt. Bourjade personally destroyed three of these balloons.

Lastly, the aerial observation service did not cease to mark the position of our troops, and especially that of the enemy, and to direct our artillery fire with great effect.

Sub-Lt. Haegelin shot down his 10th machine on July 10th. Up to that date he counted to his credit four captive balloons and six aeroplanes officially confirmed.

July 18th.—Our Aviation Service continued to play a brilliant part in the battle during July 16th and 17th. On the 16th our bombing crews did not cease to attack the Marne bridges and to hamper the passage of the enemy troops. The latter, attacked by machine-gun and bomb at the moment when they were debouching on the northern and southern banks, suffered heavy losses, and were compelled to scatter on several occasions.

The bridge thrown by the enemy in front of Dormans was subjected to a flood of projectiles and collapsed. The convoys which were crossing it were engulfed in the river.

Our bombers also carried out expeditions against the cantonments, stations, munition depots, and concentration points behind the enemy front.

Twenty-one tons of explosives were dropped in the daytime and 14 tons during the night. Our observers noted great damage at various points; a violent explosion at the station of Maison Bleue and fires in the stations of Coucy, Les Etapes, and Bazoches.

Our aeroplanes, with their customary intrepidity, fought numerous combats above the enemy lines. Twenty-nine German machines were felled or disabled and five captive balloons were set on fire.

On the 17th, notwithstanding a violent wind and torrential showers, our crews took the air and obtained good results. Twelve German aeroplanes were felled and four captive balloons destroyed.

During attacks on the Marne crossings about 50 tons of explosives were employed.

Army of the Orient.—On the Col de Langa Allied aviators bombarded the aerodromes of Rudove and Kanatlarci.

In aerial fighting an enemy aeroplane was shot down and two others were obliged to land.

July 19th.—Last night a few enemy aeroplanes made for the Paris district. The defence forces were brought into action, and our batteries opened fire. The warning was given at 11.58 p.m. and the "All Clear" sounded at 12.40 a.m.

July 19th.—During Thursday our Aviation Service, in collaboration with British squadrons, continued its work on the whole battle-front. Twenty German aeroplanes were shot down or driven out of control by our pilots, and two captive balloons set on fire. On their side the British crews destroyed seven enemy machines.

Our bombing groups carried out their expeditions against the crossings of the Marne. One foot-bridge west of Reuil was bombed and destroyed. Cantonments and assemblies of troops at Oulchy-le-Château, in the Vauxbuin Ravine at Fère en Tardenois, and in the region of Œuilly were attacked with machine-guns and bombs, and broken up. The railway stations behind the front were pelted with projectiles. Fires broke out at the railway stations at Amifontaine and Fismes, and big explosions were observed at Pontavert.

Twenty-two tons were thus employed during the day and 21 during the following night. The British crews which took part in these operations dropped for their part 2½ tons of explosives with excellent results.

July 20th.—Army of the Orient.—During the day's air fighting the British aviators forced two enemy aeroplanes to land.

July 21st.—Our Air Service, redoubling its activity during the day of July 19th and the night of July 20th, multiplied its expeditions, and carried on a very hard fight with the enemy forces.

The French and British bombing machines, taking as their principal objectives the crossings of the Marne, did not cease to hinder and in some places completely stopped the enemy's supply service, thus playing an important part in the struggle which was to bring about the retreat of the German troops, attacking with machine-guns and bombs the concentrations of troops which the enemy was preparing for his counter-attacks, and his columns and convoys. They caused the enemy serious losses.

On the Marne, as well as at Oulchy-le-Château, Fère-en-Tardenois, Fismes, Bazoches, and in the whole rear zone of the battle, 24 tons of projectiles were dropped during the day, and 28 tons during the night on the enemy's assemblies and lines of communications.

A violent fire broke out at Vouziers and several at Fère-en-Tardenois, at Fismes railway station, and south of this region. Explosions were observed at Laon railway station.

At the same time, our infantry aeroplanes marked the advance of our troops and tanks between the Aisne and the Marne, signalled the arrival of enemy reserves, and took direct part in the battle by attacking these reserves with machine-guns.

The many fights fought by our crews in collaboration with the British obtained good results. Twenty-six German aeroplanes were shot down or put out of action, and four captive balloons were set on fire.

Everywhere the German Air Service was made to feel the sting and superiority of the Allied aviators.

July 22nd.—During the day of July 21st the activity of our bombing aeroplanes continued to be very great, in spite of very poor weather. In the course of day and night expeditions 50 tons of projectiles were dropped on the enemy's lines of communication, the cantonments and bivouacs of the Vesle and Ardre Valleys, and on the railway stations of Laon, Fismes, Berry-au-Bac, etc.

Fère-en-Tardenois, crowded with troops and convoys, was the object of very violent bombardments, as the result of which an immense fire, followed by several explosions, was observed. Another fire broke out at Fismes railway station. In addition, several tens of thousands of rounds of cartridges were fired on German troops and batteries, which had been very active, and which were reduced to silence, in the region of Courmont, Ronchères, and Villeneuve.

During the same day our crews shot down nine enemy machines.

GERMANY.

July 16th.—In spite of low clouds and a high wind the aerial fighting forces were active. From a low altitude the aviators, with bombs and machine-guns, attacked in the battle on the ground. Yesterday they brought down over the battlefield 31 enemy aeroplanes and four captive balloons. Lt. Loewenhardt and Meckhoff achieved their 36th victory, and Lt. Bolle his 21st.

July 17th.—A further 36 enemy aeroplanes and two captive balloons were shot down yesterday over the battlefield.

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Lt. Meckhoff obtained his 37th and 38th aerial victories, Lt. Loowenhardt his 37th, First Lt. Loerzen his 26th, Lt. Rone his 22nd, and Serjt Thom his 21st.

July 18th.—Twenty-three enemy aeroplanes were shot down yesterday. Lt. Jacob obtained his 23rd aerial victory.

July 19th.—Enemy columns which were endeavouring to reach the battlefield were the objectives of our successful battle-planes. Our chasing planes shot down 32 of the enemy's aeroplanes.

Lt. Loewenhardt obtained his 38th and 39th aerial victories, Lt. Bolle his 23rd and 24th, and First Lt. Goehring his 22nd.

July 20th.—Yesterday again 30 enemy aeroplanes and seven captive balloons were shot down. Lt. Lowenhardt obtained his 40th and 41st, Lt. Meckoff his 39th, Capt Berthold his 38th, First Lt. Lörzer his 27th, Lt. Jakobs his 24th, and Lt. Könnecke his 22nd aerial victory.

July 20th.—Battleplanes repeatedly with machine-guns and bombs took part in the successful fighting against the attacking infantry and groupings of armoured cars and columns. Yesterday we shot down 24 enemy aeroplanes and three captive balloons. Capt. Berthold gained his 39th, First Lt. Lörzer his 28th, and Lt. Billik his 24th aerial victory.

AUSTRIA.

July 18th.—In the early hours of July 17th about 200 bombs were dropped on Pola by several squadrons of enemy aeroplanes and seaplanes. The victims to be deplored are two killed (civilian workmen) and several wounded. The damage caused is insignificant.

ITALY.

July 16th.—During the day and night our own and Allied aviators and airships of our Army and Navy were very active. Twelve enemy aeroplanes were brought down.

July 17th.—Military objectives in the enemy's front lines and rear areas were attacked by aeroplanes and airships. Two hostile aeroplanes were brought down.

July 17th.—During last night two naval airships dropped over one thousand kilogrammes of explosives on military objectives at Pola and on the naval anchorage with visibly good effect. Despite vigorous anti-aircraft fire, aided by numerous searchlights, the airships returned unharmed to their base.

This morning Pola was again bombed from the air by numerous naval aircraft with notably good effect, particularly the seaplane station and the submarine station. Anti-aircraft fire was very intense, but the air squadron returned to their bases.

Aircraft were also active to-day in the Middle Adriatic, bombing successfully the hangars in the Isle of Lagosta and local defences. Our machines all returned undamaged, despite violent anti-aircraft fire.

July 18th.—During the night of the 16th-17th inst. and yesterday morning airships of the Italian Royal Navy and powerful flights of bombardment planes dropped with ascertained effectiveness 8,000 kilos (8 tons) of bombs on military works in the maritime fortress of Pola.

Minor bombardment actions were carried out last night on vital centres in the enemy's lines of communication. Three hostile machines were brought down in air fighting.

July 19th.—A large squadron of Italian seaplanes this morning bombarded the military works at Antivari and the vessels moored there. Serious material damage was observed. All the aviators returned.

The Chief of the Naval General Staff announces that the British air service has effectively contributed in the Adriatic in attacks on enemy naval bases While the Italians were acting against Pola and Lagosta yesterday a British squadron effectively bombarded military works at Cattaro. All the British aviators returned to their base.

July 21st.—In the Adamello region nine enemy aeroplanes were brought down during air fighting.

July 22nd.—Two enemy aeroplanes were brought down in air fighting.

U. S. A.

July 17th.—Yesterday, in the region of Thiaucourt, a hostile aeroplane was shot down by one of our aviators.

BELGIUM.

July 17th.—Sous Lt. Coppens brought down his 13th observation balloon, thus achieving his 15th aerial victory

An enemy aeroplane was brought down by our artillery.

July 21st.—Sous Lt. W. Coppens brought down two enemy balloons—one on Friday evening, the other on Saturday morning, thus achieving his 16th and 17th victories.

A German aeroplane was brought down by the artillery

TURKEY.

July 13th.—On July 12th the flight of an air squadron towards Constantinople having been signalled, our chaser-planes immediately ascended, and, after engaging the enemy, compelled him to withdraw.

BULGARIA.

July 17th.—We captured a French aeroplane intact with its pilot, having forced him to descend behind our lines.

July 17th.—East of the Vardar, after an air fight, German aviators brought down two enemy aeroplanes. A third was hit by our anti-aircraft batteries and fell in flames behind our positions near the Vardar.

THE WAR IN REVIEW.

From the German Side.

According to a Berlin telegram, dated July 16th, 33 air attacks took place during June on the German homeland, of which 12 were against the Alsace-Lorraine and Luxemburg industrial districts, four against the Dillingen and Saar region, three against Saarbrücken and Karlsruhe, and one each against Offenburg, Ludwigshafen, Landau, Mannheim, Coblenz, Trèves, and other places in the Rhine district.

The telegram admits "slight damages" to a blast furnace in the Saar region and to works at Ludwigshafen, and says that the damage to private houses in several towns is not inconsiderable.

Altogether, 34 persons were killed, 37 severely and 35 slightly injured.

The Loss of a Zeppelin.

According to the "Nieuwe Rotterdamsche Courant," on July 15th a Zeppelin fell in flames just over the German frontier in the direction of Dalhem.

The Effect of a Bomb.

The "Handelsblad" (Amsterdam, July 16th) learns that a bomb was dropped on Lippens Castle, at Bruges, where some German officers were in the company of some women. The report adds that almost all of them were killed.

Hoist with their own Petards.

The "Times" correspondent writes from Paris on July 17th:—

On Monday night a camp of German prisoners situated 30 miles from the front in the region of Troyes was bombarded by a squadron of big German aeroplanes. The raiders stayed over an hour, killing 94 and wounding 74 prisoners. Two French camp guards were wounded.

A German Aerodrome Burnt Out.

According to a message from Amsterdam on July 17th a frontier correspondent states that a mysterious fire has completely destroyed the new aerodrome erected by the Germans near Nivelles, in Belgium. Sheds containing twenty-two aeroplanes were entirely consumed. Ten Belgians and two German non-commissioned officers have been arrested. The fire is said to have been caused by German revolutionaries in the army. The day before the fire a secret meeting took place in a canteen in Nivelles, where the scheme for destroying the aerodrome was discussed.

The End of a Munition Factory.

The "Tyd" (Amsterdam, July 18th) says it is reported in South Limburg that a zinc oxide factory at Rothem (Belgian Limburg), which had been converted into a munition factory, has been blown up by bombs dropped by aviators.

Keeping It Going.

A Karlsruhe telegram to The Hague says that Offenburg was again bombed on July 15th. One person was killed and one severely injured.

The Death of German Aces.

The "Lokalanzeiger" reports on July 16th, the death during a trial flight of Capt. Willy Reinhard, the commander of Rettmeister Baron Manfred von Richthofen's Air Squadron. The squadron claims 177 aerial victories under its new commander.

* * *

The "Lokalanzeiger" of July 22nd reports the death of Lieut. Friedrichs in an aerial combat. Lieut. Friedrichs, who claimed 21 victories, had belonged to the Richthofen squadron. Lieut. Hans Kirschstein, also a pupil of Richthofen, for whom 27 victories were claimed, and who had been decorated with the Order Pour le Mérite, has also been killed.

The Death of Quentin Roosevelt.

Lt. Quentin Roosevelt, youngest son of the former President of the United States, has died from a wound received during an air fight. Mr. Roosevelt was killed on the Château Thierry front on July 14th, returning from a patrol. He was attacked by a German squadron, and it was seen that he suddenly lost control of his machine, having most probably received a mortal wound. His cousin, Artillery Captain Philip Roosevelt, who was in the trenches, saw him fall, only knowing later that it was his cousin.

Mr. Roosevelt, who was only 22 years of age, enlisted as an aviator immediately war was declared between the United States and Germany. He arrived in England last August as a member of the first American "Aviation Corps," and quickly earned a reputation as a clever flier. Only recently it was announced that he had been engaged near Château Thierry in a fight with three German aviators, one of whom he brought down.

A Reuter's message from Oyster Bay, dated July 17th, states that Mr. Roosevelt, upon the receipt of the Press dispatches announcing the death of his youngest son, said: "Quentin's mother and I are very glad that he got to the front and had a chance to render some service to his country and show the stuff that there was in him before his fate befell him." Mr. Roosevelt stated that he would attend the New York State Republican Convention at Saratoga Springs to-morrow to deliver an address, as arranged before the news of his loss reached him.

The hope that Mr. Roosevelt had been captured alive was dispelled by a message from the German Official Agency at Army Main Headquarters saying:—

An American squadron of twelve battle aviators was trying to break through the German aerial defence over the Marne, and, in a violent tussle which ensued with seven German machines, one American, in particular, stubbornly repeated his attacks. The struggle culminated in a duel between him and a German non-commissioned officer named Greper, who, after a short fight, succeeded in getting a good aim at his "brave but inexperienced" opponent, whose machine fell after a few shots near the village of Chambry, ten kilometres to the north of the Marne. The American, who proved to be Lt. Quentin Roosevelt, had been killed by two shots through the head, and was buried by German aviators, with military honours, at the place where he fell.

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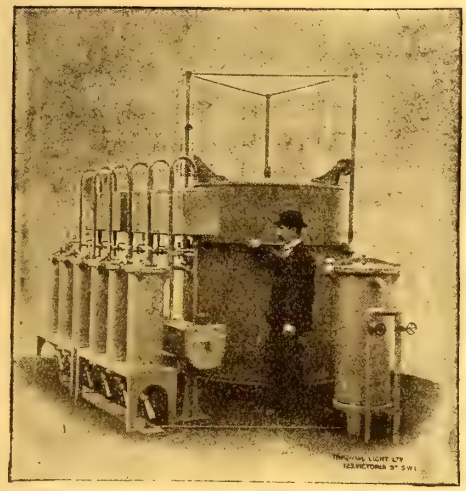
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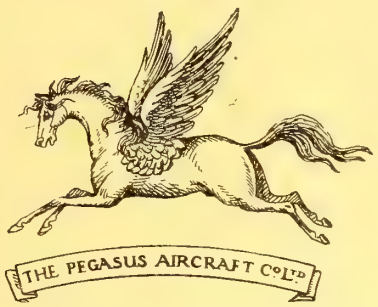
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The Royal Air Voyage.

From the "Daily Express" of July 23rd:—

The German Press has taken full advantage of the little aeroplane trip to London and back, which was recently made by the Belgian King and Queen. "King Albert and his Queen," it is announced in heavy black type, with appropriate headlines in letters half an inch deep, "panic-stricken at the near approach of the German forces to their hiding-place, have fled to London!"

The Cause of Internment.

It is now learned that the German submarine U39, which took refuge at Cartagena last May in a damaged condition, was damaged as the result of being bombed by six Allied seaplanes.

Brazil and Bombing.

Caproni bombing war aeroplanes are to be presented by the Italian population in Brazil to the people responsible for that nation's aerial policy. Presumably not for taxying around training camps.—T.S.H.

Bombing an American Ambulance.

It was reported from Paris on July 16th that an American ambulance station at the front was bombed by German aviators at 11 p.m. on the previous day. Three bombs struck the station, destroying three tents, killing two men, and wounding nine other persons, one of whom was an American nursing sister.

On the Albanian Front.

Signor Lelli sends to the "Secolo" from Albania a dispatch in which he says that in the recent operations there, which have led to the taking of Berat, "the gallant British also covered themselves with glory." The work of the Royal Air Force in bombing the bridge over the Semeni River on the Austrian line of retreat was indeed of great value in completing the Italian victory.

Italian cavalry were thrust forward by night into the enemy's lines and took them absolutely unawares. Near Fieri at dawn they captured an Austrian aerodrome, machines, pilots, and mechanics complete, just as they were bustling about starting the day's work. The Italians were in full possession when an enemy aeroplane, returning from a flight, landed in the midst of them.

The pilot had not stopped his engine before he found that Italian cavalrymen were riding at him over the grass from all sides. He at once set off again, firing with his machine-gun as he rose. The Italian cavalry replied with a volley from their carbines, and the aviator, hit by a bullet in the mouth before he had risen 50 feet, crashed to earth with his machine.

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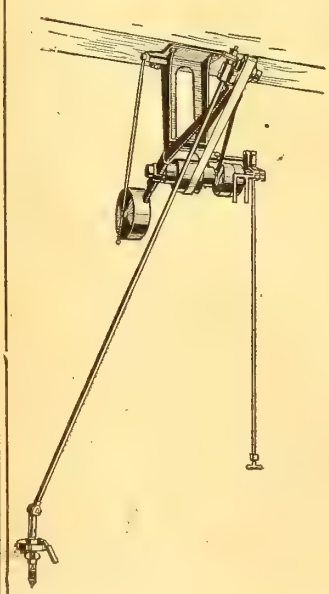
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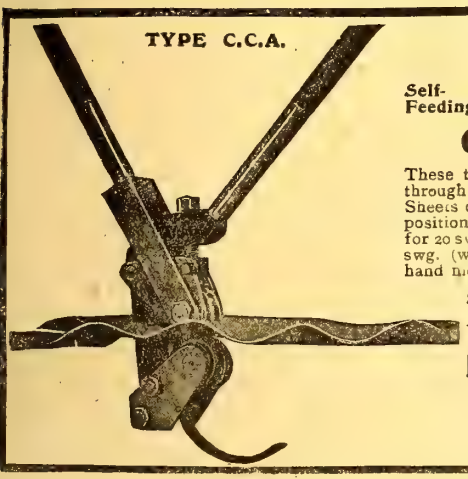
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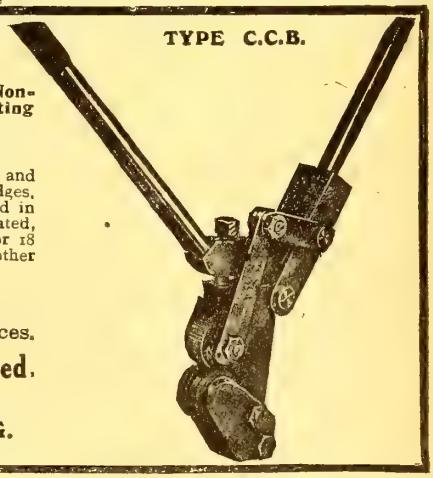
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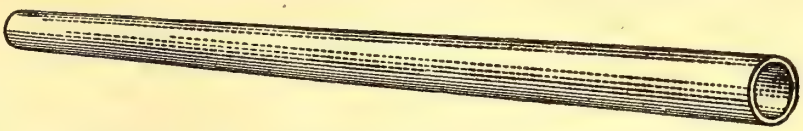
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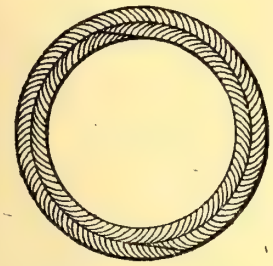
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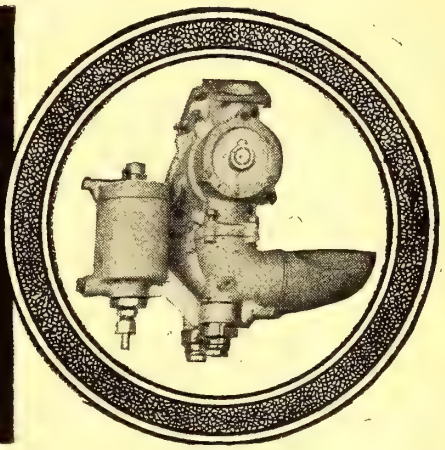
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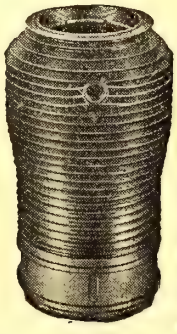


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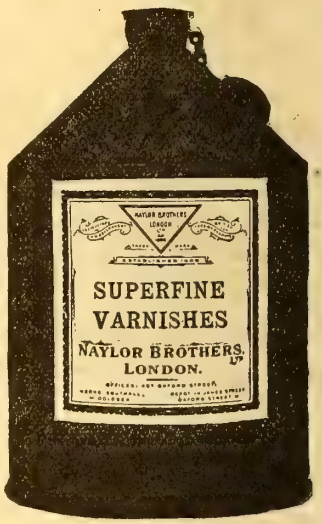
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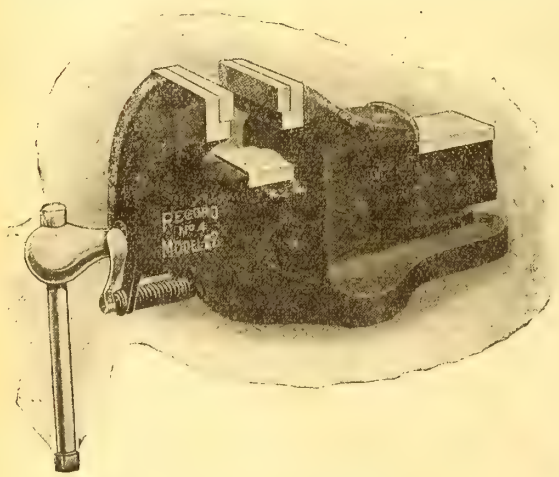
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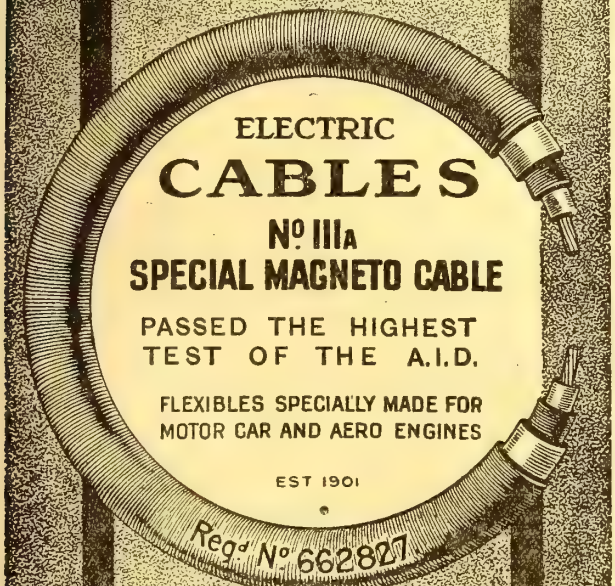
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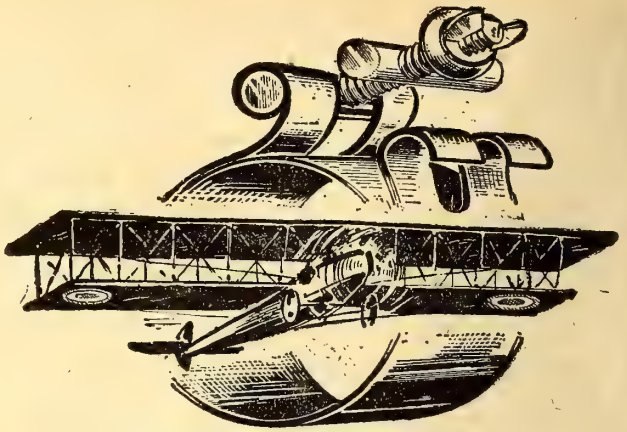
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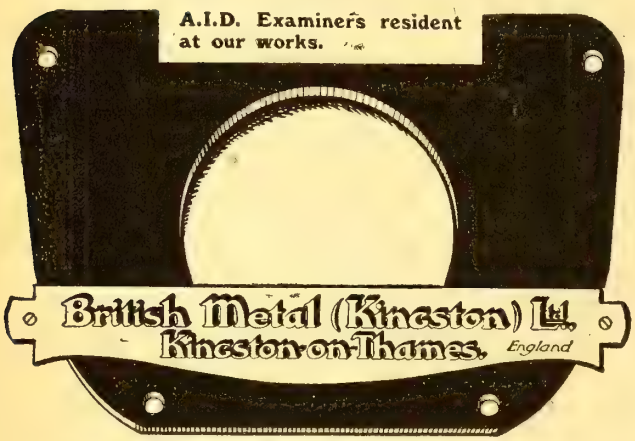
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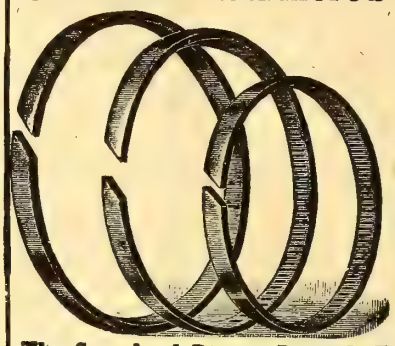
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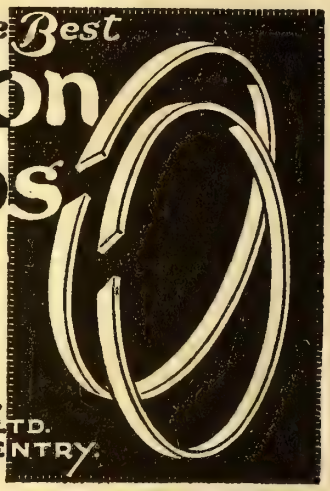
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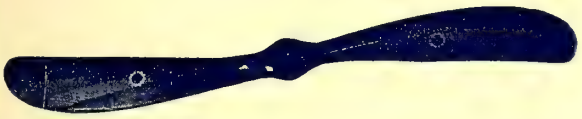
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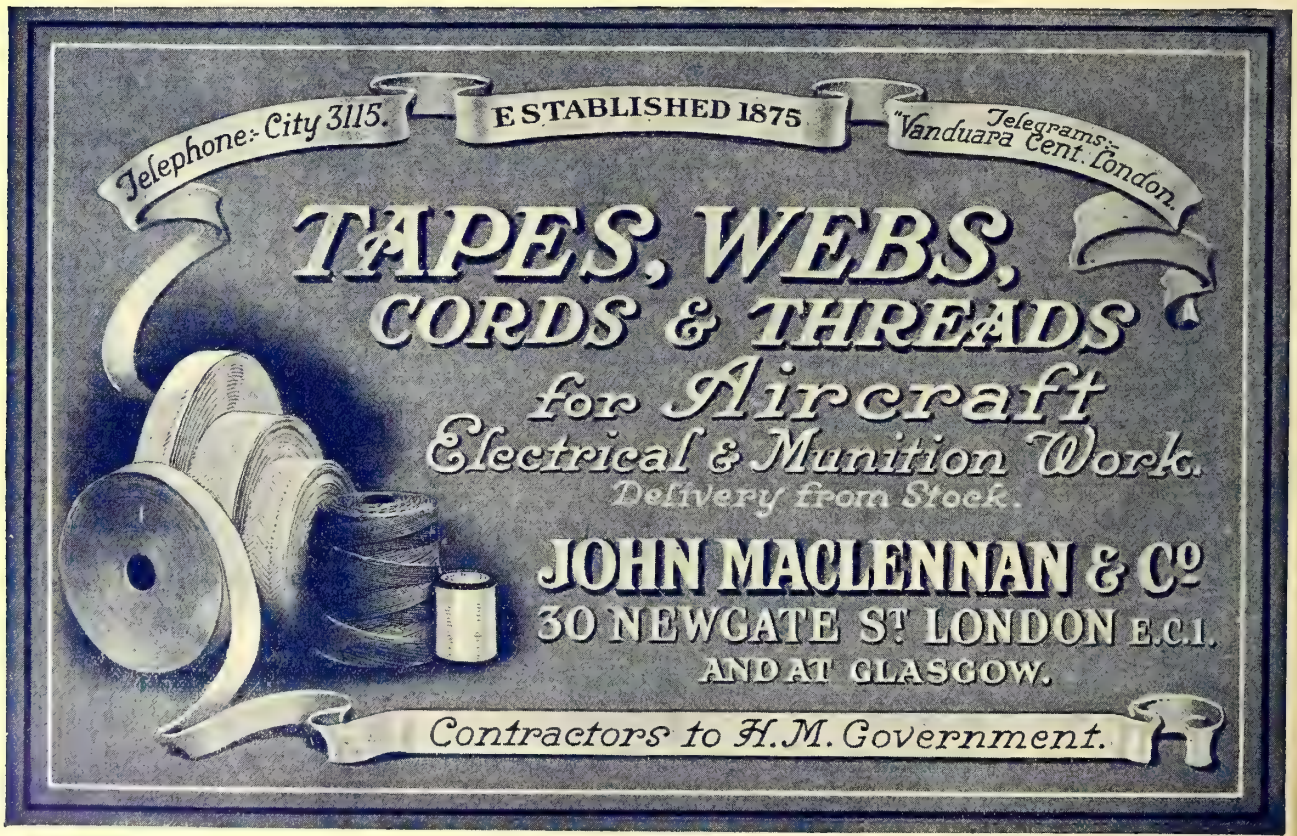
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Printed for The Aeroplane and General Publishing Co., Ltd., by Bonner & Co., The Chancery Lane Press, Rolls Passage, London; and Published by The Rolls House Publishing Company, Ltd., at Rolls House, Breams Buildings, London.

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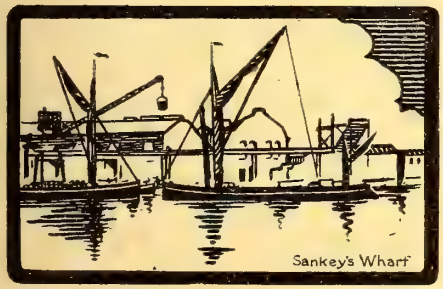
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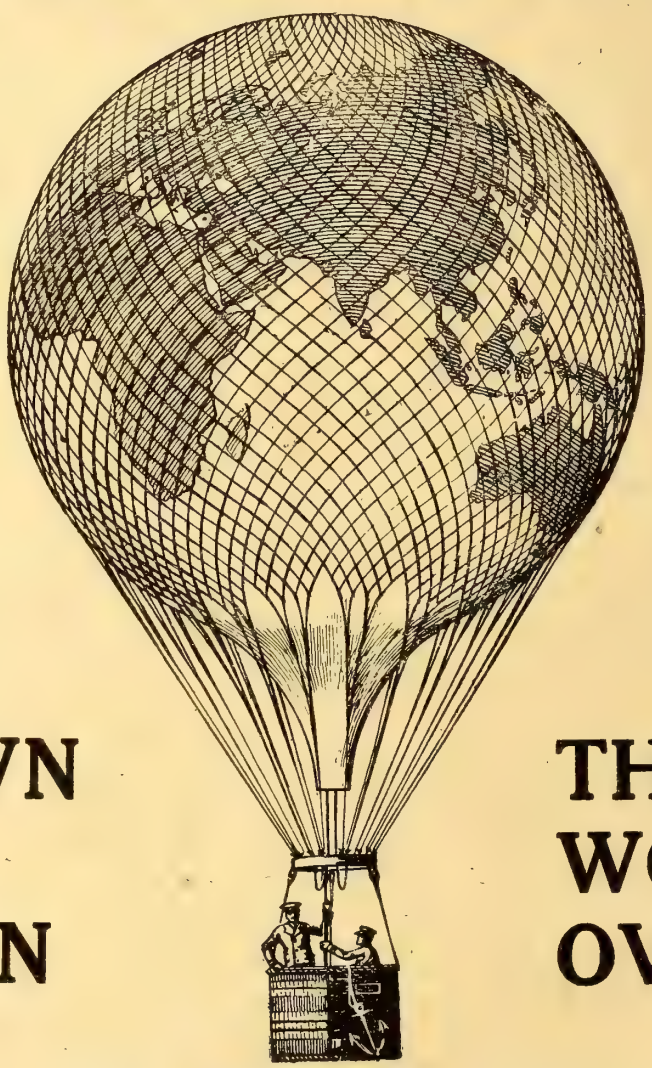
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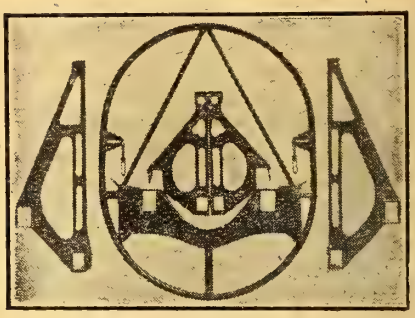
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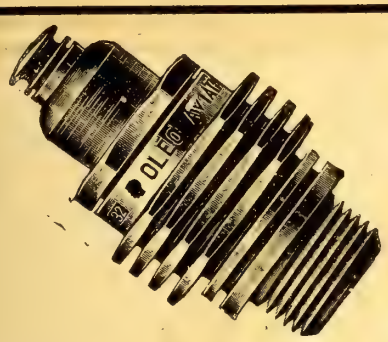
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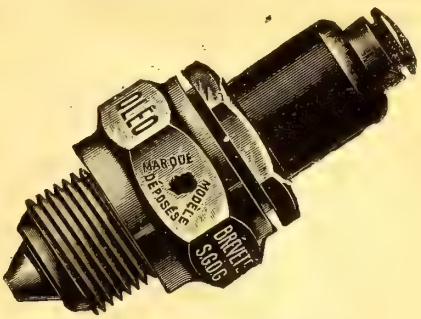
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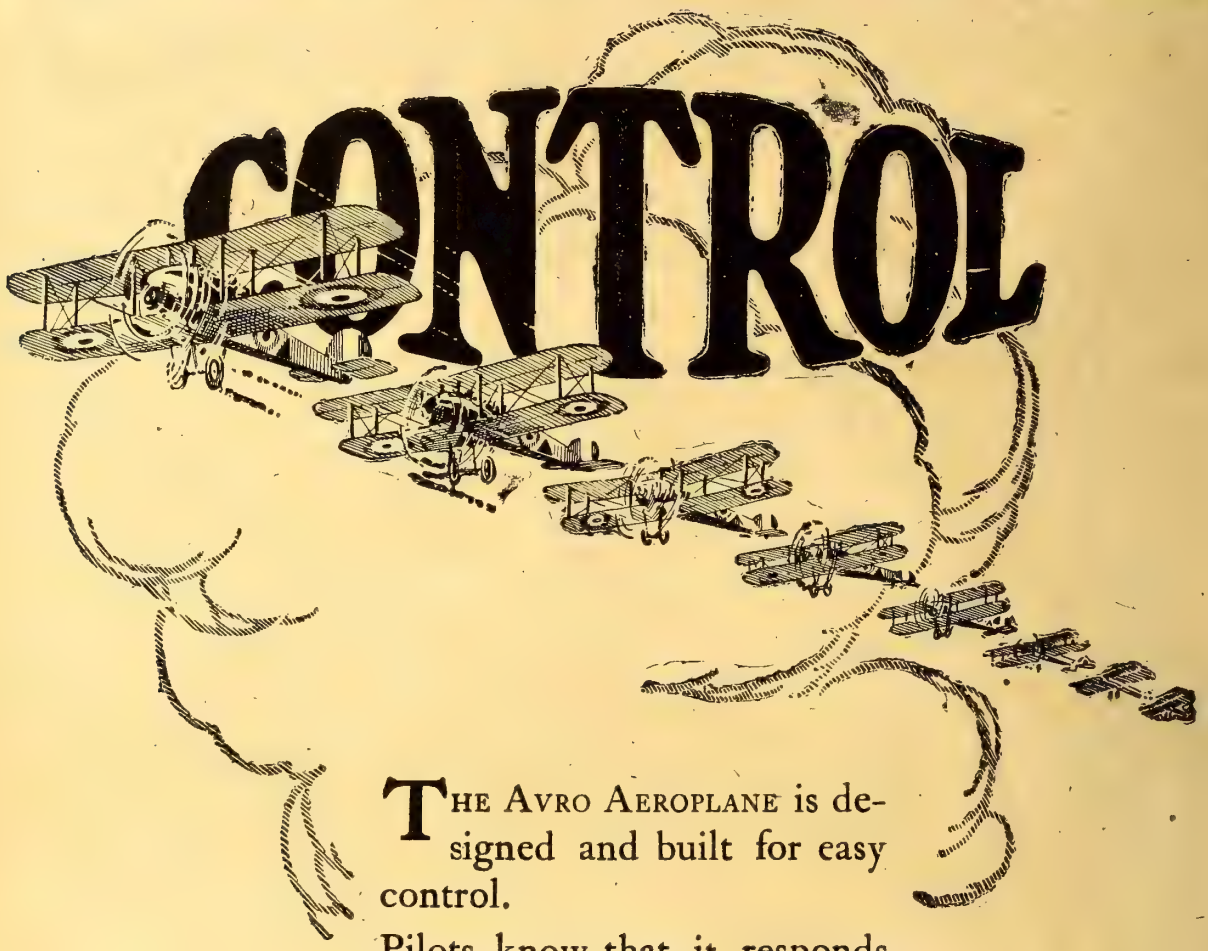
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ON THE LIMITATIONS OF PARACHUTES.

For the best of all possible reasons—namely, the welfare of our active-service pilots—this paper has devoted a great deal of attention to the question of parachutes during the past few weeks. One gathers that the use of parachutes, or at any rate the fitting of parachutes for use in case of need, is highly approved by the more experienced pilots, some of whom have actually tried parachute drops themselves so as to be able to speak with authority on the subject. Most of these drops have been done from kite-balloons, but one believes that several pilots have also dropped from aeroplanes.

So far as one can discover, the first drop to be made from an active-service type of aeroplane was made by the late Captain Clive Collett, M.C., who was afterwards killed in one of those accidents in which a parachute could not have been any use to him. He was, it seems, looping over the Firth of Forth, and after coming normally out of a loop something flew off from the cowl of the machine and hit him on the head, stunning him so that he dived straight into the water. At any rate such is the only explanation which one has been able to obtain.

The interest which is now, after so long a delay, being taken in parachutes makes it advisable to point out quite clearly that the parachute is not a species of patent medicine which is guaranteed to prevent all fatal accidents which can occur to the crew of an aeroplane. The convert is always liable to become a fanatic, and it is eminently necessary that a perfectly sane view should be taken as to the limitations of parachutes.

Dropping and Soaring Parachutes.

It is probable that the modern dropping parachute would save the life of the pilot, and of the passenger if there happened to be one, in nine out of ten accidents which occur through aeroplanes going wrong at a height of a few thousand feet, whether by fire or breakage, and whether by enemy action or occurring spontaneously—so to speak. It is also probable that in many cases of collisions in the air parachutes would enable the aviators to get out of the wrecked machines and descend safely.

Furthermore, parachutes exist which, instead of being pulled out below the aeroplane by the aviator jumping out and falling faster than the machine, can be launched upwards and so pull him out above the machine, which is left to dive earthward below him.

Such a type, which is known as the "soaring parachute," is obviously necessary in the case of a machine the controls of which have been carried away so that it is going round and round in a flat spin, for in such an event the aviator might, with an ordinary parachute, drop away below the aeroplane for a hundred feet or so, and after the parachute had opened the machine might spin into it and cut it to pieces. If the aviator were pulled out above the machine, such a danger could not exist.

Also, in the case of the wings being pulled off a machine through the pilot flattening it out too quickly after a fierce dive, or in the case of the wings being shot off by an enemy, it seems possible that the fuselage minus the wings, being an excellent streamline, might even fall faster than the man, so that the parachute would never receive the tug of the man's weight which is necessary to release it from its case. Therefore one perceives at once certain very clear limitations to the use of the type of parachute which depends for its release on the force of gravity being applied below the aeroplane to release the apparatus.

Nevertheless, pending the perfecting of the upwardly launched parachute, it seems of the first importance that the dropping parachute should be fitted to existing aeroplanes both for training and for active service, for they would certainly save very many lives, especially in the most horrible of all aeroplane accidents, those caused by fire in the air.

What Can and Cannot Be Done.

There are those, however, who, having suddenly realised what can be done by parachutes in the way of saving lives, especially by the "soaring" type, may be inclined to think that as such parachutes open practically instantaneously they can rely upon them to save lives even in accidents in which the aeroplane goes wrong within a few feet of the ground. It is against this class of over-belief that one needs to offer a warning and an explanation.

There is no doubt whatever that with a soaring parachute a man could quit an aeroplane which was careering along at 140 miles an hour or more within five feet of the ground, and could descend safely. For the matter of that he could, with a soaring parachute, get out of a motor-car travelling at such a speed, if it were possible to that antiquated type of vehicle. But it is not the mechanism of the parachute which would make life-saving impossible in accidents near the ground. It is purely the human element.

The reason is that if a man's machine goes wrong and gets out of control his natural instinct is to wrestle with it, and to try to get it under control again. That is to say, if a rudder control broke at 1,000 feet, the pilot would try every possible way of getting control of the machine, such as banking it over to make its nose fall to the side on which the rudder did not operate, and he would almost inevitably hit the ground long before it ever occurred to him to use his parachute.

Similarly if a machine caught fire at, say, somewhere between 500 and 1,000 feet, a man would probably try to get it down on the ground and put the fire out rather than leave it by parachute and let it crash itself. The result would probably be that he would be burnt, or

asphyxiated, or the petrol tank would explode, before he reached the ground. Or else he would make a bad landing in the excitement of the moment, turn the machine over, and be burnt among the wreckage.

Moreover, there are certain engines which, if treated carelessly, have a habit of setting themselves on fire in the air. The fire goes out without setting light to the machine itself if the pilot turns off the petrol promptly. At certain stations part of the regular curriculum of training is the art of setting these engines alight in the air and letting them go out again. The instructors say that it gives the pupils confidence to see the whole front of the machine apparently well alight and to find that nothing happens afterwards. A pilot trained on this Spartan principle would certainly never think of quitting his machine by parachute if it caught fire near the ground. He would probably hold on till the very last moment, and would have come down quite a long way before he was convinced that it was time to move, unless, of course, the petrol tank caught fire, and then probably it would be too late.

The Human Element.

It will probably be hard enough to get a man to quit his machine by parachute in any case, until he has convinced himself that he has no control of it whatever. And that means a fall of several thousands of feet. One has in mind two cases of personal friends as arguments in point.

One of them got into a spin on some sort of a B.E. at about 5,000 feet. He did everything possible to get out of it. He waggled everything in every direction, and nothing happened. Finally, after a long drop, he put everything central and hoped for the best. After a short time the machine suddenly "came to" with a jerk, and the controls again functioned properly. When he regained control he found himself so close to the ground that he had to fly *under* some telegraph wires to avoid either colliding with them or hitting the earth. He scraped underneath and then went on with his reconnaissance.

In the other case, which happened at an aerodrome, the spin started much lower down, and the machine came out of it absolutely on the ground, deleting the under-carriage with great success, and leaving the pilot practically unhurt.

In neither case would the pilots have used parachutes if they had had them, for they were far too busy arguing with their machines, and trying all sorts of positions for their control-levers and rudder-bars to think about quitting in parachutes.

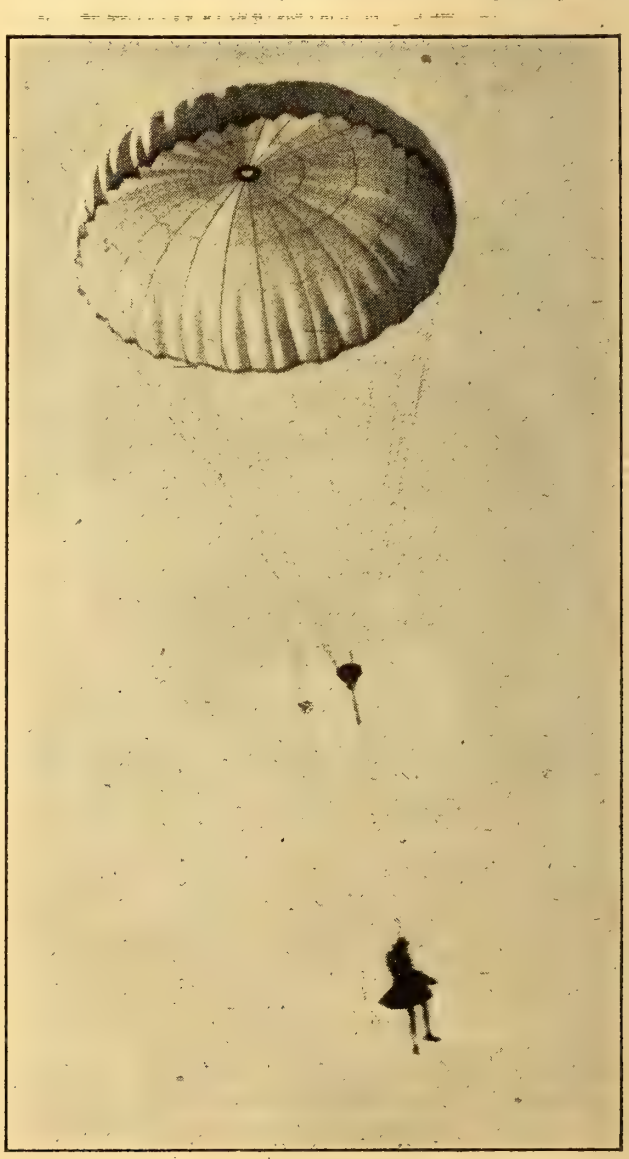
Barring cases of fire, in which any man in his senses would get out and walk at once if he were over 1,000 feet above the ground, one would probably be fairly safe in saying that nobody would be saved by his parachute unless he were at a height of at least 5,000 feet when the machine first began to go wrong. The reason is simply that the machine would have fallen between 4,000 and 5,000 feet before he had tried all known means of regaining control and had made up his mind that the case was hopeless and he had better quit. That applies as well to the most experienced pilots as to absolute novices, and perhaps even more so, because the experienced man would be more likely to stay and argue about it.

As for pupils who stall their machines at 100 feet, or get into a spin at 200 or 300 feet, there is not the remotest chance of their being saved by parachutes. It is perfectly true that with soaring parachutes they could save themselves, but in practically every case they would be so fuddled and amazed by the behaviour of the machine that they would never think of thinking about getting out of it. Therefore the worst thing the advocates of parachutes can do is to claim that practically every fatal accident can be avoided if parachutes are made a standard fitting.

An Old Trick.

One of the oldest tricks of stupid or prejudiced or interested officials when they are up against a good case is to wait till the advocates of that case make an over-statement and then seize on the over-statement and use it to pour ridicule on the whole case. One saw the trick used to the fullest extent during and after the agitation which led to the Air Enquiry of 1916. One has known it to be used with quite considerable effect against this paper and the reforms which it has advocated from time to time. The fact that the reforms have ultimately been carried out has made no difference. Officialdom can still point to its little scores over the original advocates of the reforms.

In these days one is perhaps a trifle older and more cautious, or perhaps one is able to take a more dispassionate and critical view of other people's agitations, but, in any case, one can see quite well that the general adoption of parachutes may easily be seriously delayed if too much is claimed for them at the start. One would merely claim for them that in the majority of mishaps which occur at high altitudes, whether on active service or at home, parachutes would save a very large proportion of the lives which are now lost, and in nearly all cases of fire in the air parachutes would give the aviators a really good sporting chance of getting down



(From an Official Photograph.)

A Parachute Descent.

alive. For that reason they are well worth fitting as a standard gadget on all aeroplanes.

Unavoidable Accidents.

The recent lamentable fatal accident which occurred in an experimental drop from an aeroplane does not affect the argument in the slightest degree. It had nothing whatever to do with the parachute as such. The parachute did not refuse to open, for the good and sufficient reason that it was never asked to open. The breakage happened above the parachute, and by good chance the cause of it was discovered, so it cannot possibly happen again. Herein the parachute has been luckier than the aeroplane was in its early days, for death after death happened in aeroplanes in ways which could not be explained, and are only becoming explicable to-day, after many years.

One hopes that the advocates of parachutes will not be frightened off their crusade by this accident, and that they will at once make it clear to any who may be scared by it that it was not in any way an accident to a parachute, any more than it is really an aeroplane accident if a nut flies off an engine and stuns a pilot—as has happened in fact. One believes firmly that the parachute is as necessary a fitting to an aeroplane as a life-buoy is to a ship, and that it has just as good, or just as slight, a chance of saving lives, according to circumstances. It is not an infallible life-preserver, but it is an excellent insurance policy. That fact should make it worth while.—C. G. G.

ON SMOOTHING OUT THE R.A.F.

Quite a number of excellent officers of the Royal Air Force are still aggrieved because they have not yet been gazetted to their correct ranks, or because they have been wrongly gazetted. Many of them talk openly of going back to their original Services, or of leaving the R.A.F. and taking their chances of obtaining commissions in one of the Senior Services. Probably for this reason the High Authorities of the R.A.F. have extended for a further three months the period during which officers and men have the option of sending in their resignations, the idea being, presumably, to induce the non-contents to give the R.A.F. a trial for another three months, during which time it is hoped to get everybody comfortably settled down, each where he ought to be in the job for which he is best suited.

To those who feel that they have been overlooked, or badly placed, one commends the story of the American tourist on a visit to Oxford. Seeing an aged gardener at work on one of the University's wonderful lawns, he asked how grass of such extraordinarily level smoothness was produced, and allowed that there was nothing like it in the United States. To him the gardener replied: "Well! Sir, it's quite simple. You just waters it and rolls it and mows it, and waters it and rolls it and mows, and keeps on doin' it for 'undreds and 'undreds of years, and it comes like that there."

The somewhat muddled state of "appointments" in the R.A.F. is attributable to a very similar reason. The two Senior Services have been cultivating their system of appointments, so to speak, "for 'undreds and 'undreds of years," and naturally they come out more smoothly than they could be expected to do in a brand-new Service where every department is more or less an improvisation.

It is true that no sooner is one irregularity rolled out than another seems to arise, but there again it is neces-



"The Boyhood of Raffy." *(Without apologies to the late Sir John Millais, P.R.A.)*

sarily a matter of time before one beautiful level of regularity can be achieved. People who ought to be kept down seem to bob up in unexpectedly prominent places, and the good men sometimes seem to have disappeared altogether. Which reminds one of a famous "Punch" picture.

An unknowledgeable town-dweller is seen looking at a number of mole-hills on a lawn, and asks the gardener what they are. The gardener replies, : "Woi, Sir!! They be oompty toomps!" "What on earth are oompty toomps?" asks the townsman. "Woi, toomps what the oompties makes, o' course, Sir!" says the gardener.

Somehow there seems to be a number of "ompties" in the Hotel Bolo who keep on disturbing the surface of the Air Ministry's artistic lawn, but doubtless in due course they will all be eliminated, and then everybody will be happy. Meantime one feels sure that every effort is being made to level things out properly.

Some Amusing Errors.

It is true that some quite amusing errors have been made. For example, it was rumoured very early in the proceedings that all the administrative officers had been gazetted in one lump as technical officers with technical pay, and that all the technical officers had been made administrative officers and deprived of their technical pay. Such wholesale mistakes are easily discovered and put right. It is, however, the individual cases which take so much more finding.

For example, all the good little 2½ stripers R.N.V.R., doing all kinds of useful, or useless, jobs round the house, so to speak, are on the spot and can go and see to it personally that they are duly endowed with the brass hats of majors. But there is nobody to look after the interests of the poor officer on active service. Consequently one comes across cases of substantive squadron-commanders R.N.A.S., who held permanent commissions in that Service, and are now pushed down as temporary majors R.A.F., with temporary commissions as captains. And one sees two-stripers or two-pip lieutenants at the Bolo going up to majors and even to higher ranks quite suddenly, though they have never seen active service, while flight-commanders with two and three years, or even more, of active service remain captains.

It seems that the active service R.N.A.S. people have come out of the bargain worse than anybody else, because, rapidly as the R.N.A.S. grew, the R.F.C. grew more quickly still, and so everybody who was at all fit to be promoted had to be put in command of the newly-formed R.F.C. units. Meantime some of the really useful R.N.A.S. people seem to have been forgotten altogether, because they have been so busy getting on with the war that they have had no time to press their claims in the Hotel Bolo. Doubtless all this will be levelled out in time by the excellent people in charge of Personnel, and one only cites these instances as indicating some of the directions in which they may begin to make inquiries in order to bring about that atmosphere of peace, perfect peace, which is so desirable in a great fighting machine such as the R.A.F.

A Naval Reaction.

Meantime, one is glad to hear that the Royal Navy is not only becoming more and more keenly interested in aviation, but that there is a disposition to accept the real Naval aviator as a man and brother.

There was a time when the eagle cap-badge and buttons and sleeve-badge on an otherwise Naval uniform caused the wearer to be practically ignored in any Naval mess. To-day one gathers that, though the wearer of the new R.A.F. uniform is regarded askance and as a thing apart, the formerly despised R.N.A.S. uniform is now a passport to any Naval mess in the vicinity. In fact, so strong is the feeling in the Navy that even if an officer in an R.A.F. uniform is discovered to have been at one time an R.N.A.S. officer he is at once accepted as having belonged to the Navy and as being compelled to wear the R.A.F. uniform willy-nilly. All of which points more strongly than ever to the Navy eventually having its own Royal Naval Air Service again, and probably in proper Naval uniforms.

The Blue Hungry Ones.

What will happen when the real sea-going Navy first sees the art-blue R.A.F. uniform one trembles to think. At any rate, the ex-R.N.A.S. people are mortally afraid to wear it.

Apropos which, one hears of terrible *faux pas*. There was what a certain gunner officer, late from India and speaking the language more or less, calls a *helofa tamasha* in progress at one of the big R.A.F. aerodromes the other day. All the big-wigs of the War Cabinet were there, and the new R.A.F. Band was in full blast —with the accent on the blast. Presently an exalted civilian official went up to one of the chief R.A.F. advocates of uniformity in uniform and inquired affably: "May I ask where you procured the Blue Hungarian Band? Are they prisoners of war?"

One brilliant young officer, when challenged the other day as to his reason for not wearing the new uniform, remarked that he was "waiting to see the Autumn Fashions" in R.A.F. kit before embarking nearly all his capital in the complete new rig which would be necessary to him if he bought anything new at all except black ties. Consequently his old R.N. uniforms are being sedulously conserved in view of a possible chance of the R.N.A.S.—or R.N.A.F.—going back to the Navy again and becoming pukka Naval officers.

A Matter of Uniformity.

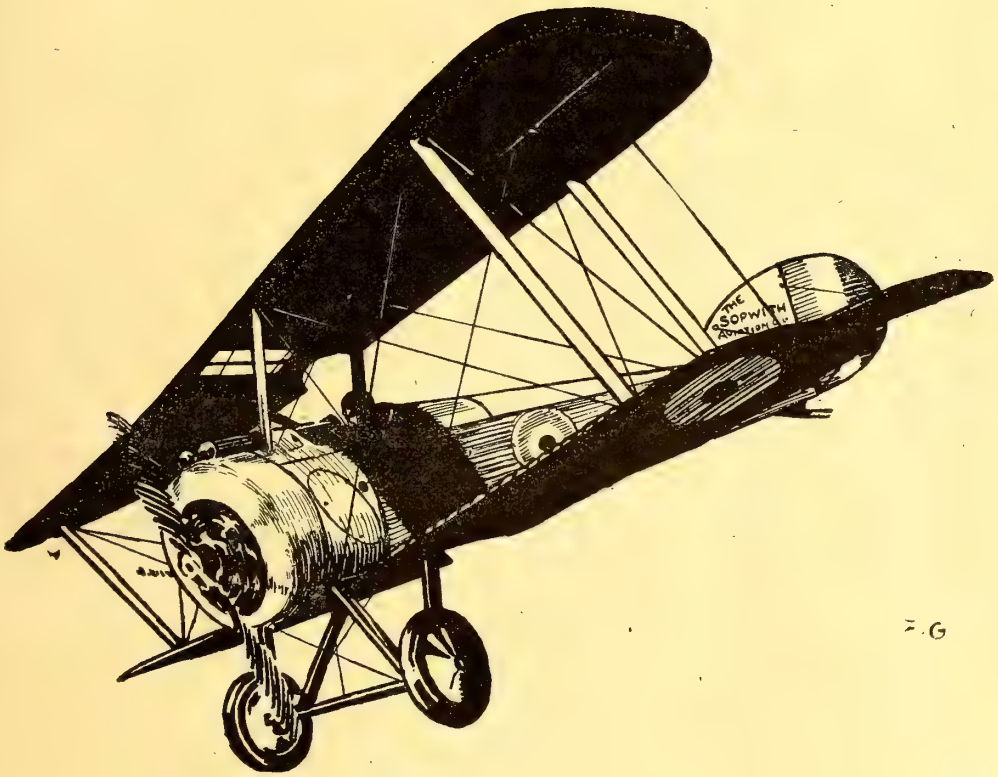
Such an event is bound to happen in time, and the sooner it happens the better it will be for the efficiency of Naval aviation. One gathers that one of the official excuses for trying to rush everybody into the art-blue uniform is that the Royal Navy objects to Naval aviators of the R.A.F. wearing a pseudo-naval uniform, and that when the new art uniform is generally worn that objection will cease. This argument is entirely false.

There was some truth in it at one time, but the objection was largely to the undue prominence given to the R.N.A.S. in the Press. A 2½ striper R.N. with 14 years' service or so certainly did object to a sub-lieutenant R.N. suddenly blossoming forth as a 2½ striper R.N.A.S. and posing as his equal in rank. But most of the objection was pure conservatism, prejudice, or jealousy. The fact remained, and still remains, that, after all, the R.N. and the R.N.A.S. were and are one and the same Service, along with the R.N.R. and the R.N.V.R. The R.N.A.S. were never trespassers on His Majesty's ships as the R.A.F. must be, so long as they belong to a separate Service and wear a revue uniform.

There was a time when a number of marine engineers were drafted direct into the R.N. in peace-time. At first they were not loved, and they were nicknamed the "Hungry Hundred." But they lived it down, and such as survive are highly esteemed. The R.N.A.S. are likewise living down the Navy's original prejudice, but they will do so quicker if they wear proper Naval uniform and rank as proper Naval officers than if they parade around in their comic-opera kit and are called the "Blue Hungry Ones" by the Navy.

The Royal Navy is now, at last, ready and willing to accept the Naval aviator as part of the King's Sea Service, and the sooner all Naval aviators are handed over, lock, stock, and barrel, to the Admiralty the better will Naval air work be done, and the better will

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

the Air Ministry be able to get along with its own private affairs.

N.C.Os. and Men.

Meantime, one gathers that efficiency is not being increased by mixing up the N.C.Os. and men of the R.F.C. with those of the R.N.A.S. in the vain hope of producing an homogeneous Air Force.

When men have served for two or three or four years on a seaplane station or on seaplane carriers, and have learned all the tricks of their sea trade, they cannot be expected to make good Army air-mechanics. Nor can a Naval air station "jaunty" be expected—with all his knowledge of Navy tricks—to become even a passable squadron serjeant-major. Contrariwise, one cannot expect an air-mechanic or even a flight-serjeant of one of the historic "First Five Squadrons" to shunt over to a coastal seaplane station and do his work efficiently.

Misapplied Specialists.

This is an age of specialists misapplied. It seems that to do work of real national importance, at any rate in this country, one must switch off from the job at which one has become a specialist through years of labour and take on a job about which one knows nothing and cares less. Probably in Germany they do things differently and put a man onto the job about which he knows most instead of taking him off it.

Which is why we send a batch of air-mechanics to do a special course of instruction on Rolls-Royces and then draft them all to squadrons equipped with Clergêts, or give them a course of mono-Gnôme instruction just after the type is washed out and then send them to B.H.P. squadrons. When such things are a matter of routine it seems quite natural that men who are specialists on seaplane floats should be sent to rig Avros or Pups in the middle of Salisbury Plain, or that skilful tuners of S.Es., after two or three years of excellent work in France, should be sent to paint the hulls of flying boats in the Outer Hebrides.

This may be the right way to produce an homogeneous Air Force in the year 1930, composed entirely of men who are Jacks of all Trades and decent journeymen of none, but it is not the way to promote efficiency in getting on with the war in the year 1918.

The Master-General of Personnel, who would be officially responsible for all such things, doubtless knows nothing about these troubles, for it would take as long for matters of such kind to work up to him as for defects in other directions to work up to the Secretary of State. One hopes, therefore, that some of those people in positions under him, who do one the honour of reading these notes, will take up these questions and will acquire much credit in High Places by advocating the doctrine of keeping specialists on their special jobs, and thus promoting that high state of efficiency in the R.A.F. which existed in the R.N.A.S. and the R.F.C. before the 1st of April, 1918.—C. G. G.

A REGRETTABLE ACCIDENT.

On July 24th the successful series of experiments with the Calthrop parachute from aeroplanes was marred by a fatal accident, which was as unforeseeable as it is deplorable.

Mr. Edwin Boyle, a young engineer of considerable experience, who was responsible with Capt. Arthur Payze, R.A.F., for the design of the Payze and Boyle parachute releasing apparatus, to which reference was made in last week's issue of The Aeroplane, was killed while making a jump from 400 feet attached to a Calthrop parachute. At the inquest on July 27th a verdict of accidental death was returned.

The cause of the accident is perfectly obvious, and does not reflect in the slightest measure on the design and construction of the Calthrop Guardian Angel Parachute or of the Payze and Boyle stowage and releasing apparatus.

This cause was the fracture of one of the legs of the clip or dog-hook which connects the handle of the parachute case to the rope sling from the aeroplane.

When the parachutist falls from the aeroplane his weight pulls the parachute in its case from the fuselage, and when the suspending rope, which is attached to the aeroplane, has reached its full extent a considerable degree of shock load travels from the sling of the parachutist's harness to the parachute case. This shock is transmitted through the dog-hook along the suspending rope to the aeroplane.

By some strange mischance, when Mr Boyle dropped, the dog-hook did not pull directly on the parachute case with both its legs in tension, but, having wriggled round to one side, one leg jammed askew in the ring in the handle of the parachute case, and in consequence an enormous leverage was exerted by the handle on that leg. The leg broke across its thickest and strongest part, and as, in consequence of the displacement of the dog-hook, the opposite leg was not in the ring in the handle at all, the whole parachute still in its case fell to the ground with Mr. Boyle, without ever having a chance of operating.

The breaking of the hook is the more remarkable because something like 900 drops have been done with this particular type of hook without any suggestion of distortion, let alone of failure. Also the type of dog-hook is a standard attachment for the gymnastic apparatus of acrobats, and has never been known to fail under shocks produced by flying leaps on trapezes.

On the occasion of the fatal fall the Payze and Boyle stowage appliance had already properly performed its function, but the Calthrop parachute never had any opportunity of working. Simultaneously with the failure of the dog-hook the first function of opening did take place, namely, the detachment of the friction ring of the bridle hub from its flange on the under side of the launching disc. These parts may be seen in a descriptive article in "Aeronautical Engineering," which article was written before the accident occurred. By that time, however, the parachute case and launching disc had lost the support which should have been afforded by the suspending rope from the aeroplane, and the pull needed to unfold the rigging tapes and the parachute itself from the launching disc was not given, because there was nothing against which to pull

While deploring the death of a promising young designer and tendering one's deepest sympathy to his relatives, whom one trusts will derive comfort in their bereavement from the knowledge that he died in a plucky endeavour to make flying safer for others, one desires to reaffirm one's conviction that the fitting of parachutes to aeroplanes constitutes an important reform.

At the time of writing these notes, on July 29th, it can still be said that the type of parachute involved in the accident has never failed in its operation.—W. L. W.

OFFICER CADET UNITS AND THE R.A.F.

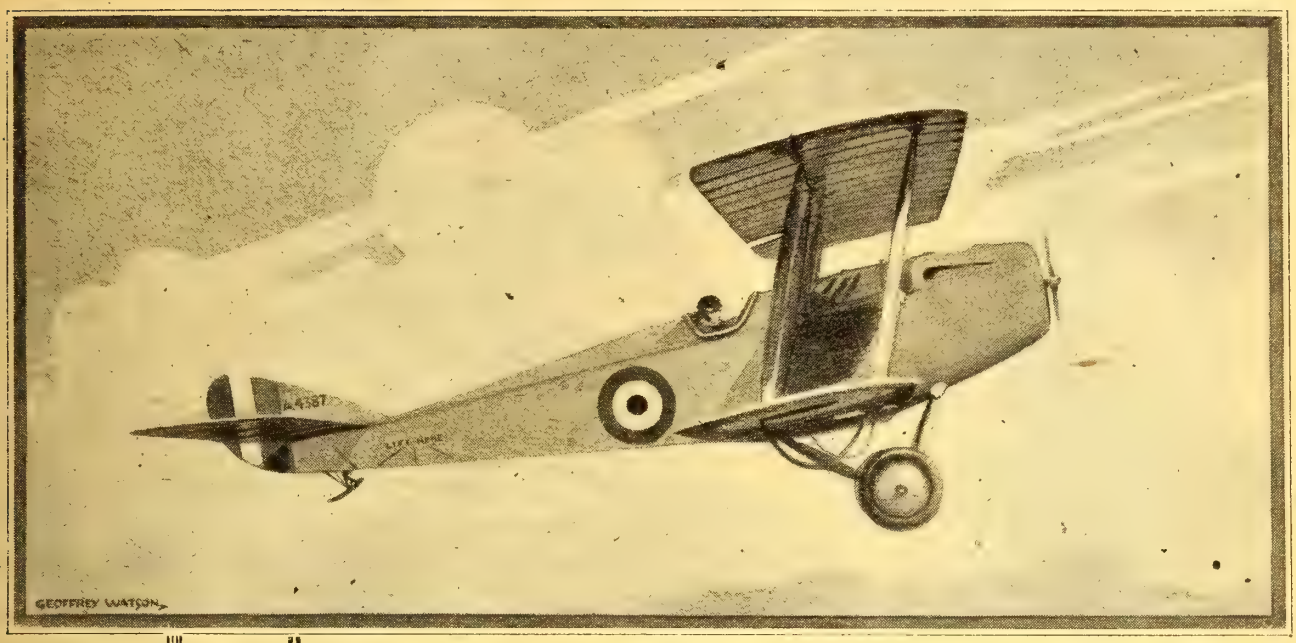
An Army Council Instruction has been issued announcing that the Army Council, in conjunction with the Ministry of National Service of the Air Council, have approved of the direct admittance of suitable lads of cadet units recognised by T.F. Aseociations into the Royal Air Force (pilots and observers).

Cadets who wish to join the Royal Air Force will, on attaining the age of 17 years and 10 months, apply to their Cadet O.C., who, if he considers the candidate suitable, will send him to the nearest reception depôt of the Royal Air Force with a written recommendation. If the candidate is accepted by the O.C. reception depôt, and, on subsequently proceeding to the Cadet distribution depôt, passes the final medical board, he will be attested and enlisted forthwith into the Royal Air Force. Os.C. Cadet units will be guided by the following considerations before recommending the lad :—

(a) The candidate must be 17 years 10 months of age at the time of volunteering. (b) He must be, as far as the Cadet C.O. can judge, approximately of Grade I. in medical category, but an anatomical defect such as lameness need not debar a candidate from his C.O.'s recommendation. (c) He must be known to the C.O. as an intelligent well-conducted lad, sufficiently well educated to ensure the successful reception of technical instruction. (d) He must be fully aware that he is volunteering for service in the R.A.F. as pilot or observer or for such duties as the exigencies of the service may demand. When admitted into the R.A.F. he will be ear-marked as a commissioned or non-commissioned pilot or observer, according to the attainments and qualifications he proves himself to possess. (e) The written consent of his parents or guardians must be supplied to the Cadet C.O.

All inquiries should be addressed to the Secretary (T.V.2), War Office. The following is the list of reception depôts of the R.A.F. :—

London, 40 Upper Brook Street, Mayfair, W.1.; Bristol, 8, Tyndall's Park Road; Cardiff, 12, Newport Road; Birmingham, Carlton Chambers, 35, Paradise Street; Nottingham, 8, George Street; Liverpool, 12, Abercromby Square; Leeds, The Mount, Springfield Mount; Newcastle-on-Tyne, 10, Sydenham Terrace, North Road; Glasgow, 9, Somerset Place, Sauchiehall Street.





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ROYAL AIR FORCE UNIFORM.

The following order concerning R.A.F. uniform has been issued by the Air Ministry :—

Important changes in R.A.F. uniform having been approved, A.M. Monthly Order No. 162 is amended, so far as officers' uniform is concerned, as laid down below.

Officers in possession of khaki uniform of the pattern authorised by the above Order may continue to wear same until it becomes necessary to renew it. Light blue uniform of the pattern laid down below must then be provided.

Light blue uniform already authorised by above quoted Order for evening wear may be taken into use forthwith for general wear, but must first be modified to conform in detail to the pattern described below.

No grant in respect of blue uniform will be made.

DESCRIPTION OF LIGHT BLUE UNIFORM FOR OFFICERS.

Cap.—Of the same pattern as the present R.A.F. khaki cap, but with light blue crown.

Cap Badge.—For all ranks below major-general as at present. Officers of the rank of major-general and above will wear a special cap badge, consisting of a wreath of laurel leaves, surmounted by crown and lion, with gilt metal bird superimposed on the laurel wreath.

Rank Distinction on Cap.—The vertical bars now worn on either side of cap badge by officers below rank of major will not be worn on blue caps.

Field officers will wear one row of gold oak leaves, and general officers will wear two rows, on peak of cap as at present.

Jacket.—The pattern is the same as that at present authorised for khaki, but the material is of light blue cloth.

Buttons.—The same design as at present authorised, but flat, and of gilding material, without " rope " edge.

Buckles.—The same type of buckle will be worn on belt, but with two prongs instead of one.

Badges of Rank.—The " bird and crown " at present worn on cuff is abolished. Badges of rank are as at present authorised, but in gold lace instead of worsted braid. Note.—Second lieutenants will wear the " half row " of gold lace.

DISTINCTIVE BADGES.

Pilot.—" Wing " of the present pattern but in gold and silver embroidery.

Service Chevrons.—Will no longer be worn in R.A.F.

Wound Badges.—Gold embroidered stripes of the pattern worn in Navy and Army.

Trousers.—Of the pattern at present authorised, but of light blue cloth.

Breeches.—Of the pattern at present authorised, but of light blue material. Strappings if worn will be of the same material as breeches.

Shirts and Collars.—Blue or silver-grey shirts and collars, with black ties, may be worn for working wear. White shirts and collars, with black ties, may be worn at option.

FOOT WEAR.

(*a*) With Trousers.—Black shoes or black boots with black socks.

(*b*) With Breeches.—Black boots and light blue puttees or brown boots and brown gaiters or brown field boots. Black field boots may continue to be worn as laid down in A.M.W.O. 331 of 1918.

Great Coats and Waterproofs.—Instructions will be issued later.

Approved patterns of all items referred to above can be seen on application to A.Q.S. 5 Branch, Air Ministry, Room 701.

THAT BLUE UNIFORM.

The sensitiveness of the new R.A.F. cloth to sunlight leads a humorous officer of the R.A.F. to suggest that in future the R.A.F. covering should not be known as a jacket, field service, officers, for the use of; or even as a tunic; but that it should simply be called " Joseph's Coat."

Nothing since the decease of the late lamented Joseph seems to give promise of such variegated colouring as the R.A.F. uniform after a little wear in our beautiful English climate. The back and shoulders will probably fade out to an æsthetic green, where it is protected by the arms it will retain something like its original blue, the front will be gracefully decorated with camouflage-streaks of oil, and on the top of this there will be the gilded ornamentation of rank stripes, badges and buckles in all the varied shades of faded or tarnished brass-work. Altogether the general effect will be very much more variegated than was intended even by the original perpetrators of the outrage. Striking as was the appearance of the R.A.F. Blue Hungarian Band, which performed recently before the King, a band which in its brilliance would have done credit to any Kürsaal from Bournemouth to Budapest, it will be as nothing compared with the ring-straked and speckled aspect of our modern Josephs in the not far distant future. And one fears that the many colours thus produced will scarcely have the effect of fascinating the Mrs. Potiphars of to-day.

THE ROYAL NAVAL AIR SERVICE COMFORTS FUND.

The Royal Naval Air Service Comforts Fund, which was inaugurated by Mrs. Sueter (president) in October, 1914, to provide comforts for the men of the R.N.A.S., has now combined with the R.A.F. Aid Committee, Surrey House, Marble Arch, W., on account of the recent amalgamation of the two Flying Services.

Owing to the great increase in the personnel of the R.N.A.S. Mrs. Sueter formed a larger committee last year, and offices in London at 25, Victoria Street, S.W., were kindly placed at its disposal by Mr. Rosher to deal with the extra work.

During the past three and a-half years the Royal Naval Air Service Comforts Fund has received £9,598 15s. 11d. in donations. Vast quantities of warm garments, and nearly 200,000 articles such as cardigans, vests, books, games, jerseys, mufflers, gramophones, and cigarettes, etc., have been distributed to the R.N.A.S. ratings at home and abroad.

The committee of the R.N.A.S. Comforts Fund is now handing over to the joint fund the balance of its cash in hand and stock, and desire to thank all those who have supported it so long.

Although Mrs. Sueter and Mrs. Henry Balfour (vice-president) are unable to serve on the new committee, they hope that that body will receive the generous support which was kindly given to the R.N.A.S. Comforts Fund, and was so gratefully appreciated by the ratings at various air stations.

Below is a statement of the condition of the R.N.A.S. Fund finances at the time of closing the Fund :—

CASH ACCOUNT.

RECEIPTS.

	£ s. d.
Balance on Oct. 1st, 1917	626 3 0
Donations, including £10 for Prisoners of War Fund	4,829 6 3
	£5,455 9 3

OCT. 1st, 1917, to JUNE 17th, 1918.

EXPENDITURE.

	£ s. d.	£ s. d.
Woollen comforts	4,201 12 4	
Knitting wool	421 19 5	
		4,623 11 9
Gramophones	267 13 1	
Games	96 7 4	
		364 0 5
Insurance of stock and goods in transit		23 19 9
Carriage and cartage		25 18 0
Appeals and postage	216 15 0	
Advertising	15 12 0	
		232 7 6
Printing, stationery, and stamps	110 16 6	
General expenses	30 17 7	
		141 14 1
Audit fee		4 4 0
Cash at bank, June 17th, 1918		39 13 9
		£5,455 9 3

We have checked the above account with the books and vouchers of the Fund and certify the same to be in accordance therewith and correct.

(Signed) THORNTON, MURRAY, & THORNTON,
Chartered Accountants.

Moorgate Station Chambers,
London, E.C.2.

	£ s. d.
Donations received from Oct., 1914, to Sept., 1917...	4,769 9 8
,, ,, from Oct., 1917, to June, 1918...	4,829 6 3
Total	£9,598 15 11

OFFICIAL SPORTS.

The Supply Department of the Department of Aeronautical Supplies, Ministry of Munitions of War, is holding a Sports Carnival at Queen's Club Gardens on Saturday next, August 3rd. The expenses are being defrayed by Brig.-General Alexander, D.S.O., Controller of Aeronautical Supplies. Admission is by invitation, and those concerned with Aeronautical Supplies can obtain tickets on application to Maj. M. L. Darby, Room 525, York House, Kingsway. Donations, which will be devoted to a good object, may accompany applications for tickets.

A WATER CARNIVAL.

That undefeatable doer of good works, Her Ladyship of Drogheda, is organising a Regatta and Water Carnival in aid of the R.A.F. Hospital Fund, to take place at Shepperton-on-Thames on Saturday, August 24th. There will be serious sculling races open to the Allied Services and to Aircraft Works, and there will also be the usual—and some unusual—comic events. The Organising Secretary is Mr. F. Norman, and entry forms, with full particulars of the events, may be obtained from him at "Isis," Pharaoh's Island, Shepperton, not later than Aug. 10th. Donations to the Regatta Fund will be highly appreciated.

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THE ROYAL AIR FORCE IN PEACE TIME.

SOME REFLECTIONS—II.

BY HENRY FORESTER.

In the middle of the Victorian era, when respectability was an impenetrable defence of Great Britain, the armed forces of the Crown were strong only on paper. The Army had less than 130,000 of all ranks on its strength. The Navy, when called upon to salute the Emperor Napoleon III on his arrival at Osborne, had perforce to drag the fifty-year-old "St. Vincent" out of honoured retirement and man it with detachments from a gunnery-school ship—this though the greatest naval dockyard of the country was within a few miles.

The troops at the disposal of the War Office for the purposes of home defence were increased by the creation of a number of dockyard battalions, recruited from the employees of the Government dockyards. These battalions, commanded in each case by "Naval Officers of rank," may have added to the gaiety of nations, but they at least served the purpose of giving a degree of military training to a class which usually avoids all the responsibilities proper to loyal subjects in the maintenance of national security. As days passed by and comic opera momentarily lost its popularity, these battalions ceased to be. Dockyard personnel, if still desirous of acquiring military merit, had to join such volunteer units as local enthusiasm had produced.

Preparation for War.

With the return of peace it is unlikely that pre-war conditions will be restored in any real degree. While human nature remains as it is, there is little likelihood that even the vastness of the present war will discourage the nations from further experiments in warlike effort. Even the exhaustion which is certain to follow the present hostilities will not give security against further trouble in the immediate future.

Hence it is unlikely that any Government, even the most stupidly democratic, will fail to maintain adequate armaments as an insurance against future inter-tribal disagreements. Some form of national service is an essential, and the industrial workers of the country will be expected to take their share.

Much trouble might have been avoided in this war had those who have remained in safety to manufacture the means of death for those abroad had been placed under military discipline from August 4th, 1914. The dangers and expenses of "strikes" would have been lessened if not entirely averted, and the military rates of pay would have kept down the price of grand pianos to a reasonable level. The cost of the war might have been appreciably reduced, and the quality and uniformity of the work would certainly have been improved.

Specialist Battalions.

In the Italian Army before the war, the technical personnel of the aerial arm was embodied in a "specialisti" battalion of the engineers, one company of which consisted entirely of aeronautical mechanics. In our own Army a somewhat similar policy was followed when, in order to escape action under the Military Service Act, the employees of the one-time Royal Aircraft Factory were enrolled in a specially formed unit known as the Hampshire Aircraft Parks.

Though these past efforts may have been but tentative and at times merely amusing, yet a development on similar lines might be advisable in connection with the Royal Air Force in peace-time. The official establishments employing workmen might very well support a number of volunteer units trained specially in aerial duties. While the detachments at these places might form the nucleus of, for instance, a Second Reserve of the Royal Air Force serving under special conditions, an additional number of detachments or companies in big works might be formed among the personnel employed in big private aeronautical firms. These latter need differ but little in terms of service, etc., from the Territorials of pre-war days.

The units formed from the Government establishments could with advantage be recruited under more stringent conditions. Each fit male employee on reaching the age of service, and on enlisting formally, would be exempt from the operation of the current conscription measures.

He would be paid at special rates, as are tradesmen in the Royal Engineers, and would receive the usual allowances, including separation or family allowance.

His rate of pay would be less than could be earned in civil employment, but against that should be balanced the pension to which under suitable conditions he would become entitled after a stated length of service.

There is much to be said for a scheme of this nature, provided the conditions of service were drafted sensibly and with due consideration of the state of the labour market. The pacifists and the large body of the population, whose only use for soldiers is in the critical time of war, would no doubt protest against what would appear to them an incentive to militarism. It is possible, however, that the Army and those who have been in the Army will have some power in the land when peace again permits them to take an interest in things political.

Exchange of Knowledge.

In pre-war days senior captains and majors in the Army, when preparing to be examined as to tactical fitness for command, might at their own request be attached, "for a period not exceeding six weeks, to an arm of the Service other than his own," that they might acquire knowledge with which to confuse the examiners when the day of trial arrived. Similarly naval and military officers met on various war courses and at the Staff College. Thus it was possible for officers to learn the customs and strange habits of others less fortunate than themselves—that is to say, in other arms of the Service or in the other Service.

Aeronautics have now become of first importance in the art of war. The whole science has expanded out of knowledge, and no act of war can be undertaken without considering all that may happen in the air and what bearing aeroplanes and airships have on the situation. Knowledge of aerial conditions concerns soldiers and sailors to an equal degree. They should know how each land or sea operation of war appears to the force in the sky. The powers and limitations of aircraft should be known clearly to them.

Hence it would appear to be desirable that facilities should be given in the future to soldiers and sailors to attend courses at air stations in all things which concern aerial war. A few flights in different types of aircraft, with some experience in each case of the duties performed by R.A.F. personnel for the Army and the Navy; a few days among the mysteries of the aerodrome and a few nights spent in hectic mutual admiration in the mess; and then sympathy would often take the place of scarcely veiled animosity, and appreciation would oust previous contempt based largely on ignorance.

The soldier would find the aviator to be almost human, while the aviator would cease to regard all soldiers as rather dull fools. The relations of the Services would be improved, and the efficiency of all increased.



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THE DEATH OF CAPTAIN GORDON BELL.

All the older generation of aviators will learn with deep regret of the death of Captain C. Gordon Bell, one of the pioneers of British aviation, who was killed while flying in France on Monday, July 29th. The news arrived just as this paper was going to press, and no particulars of the accident are available, beyond the fact that he had gone to France to demonstrate a new type of machine to the French Service d'Aviation Militaire. It is not even certain that he was killed on the machine which he went over to fly. One hopes to give an explanation of the accident together with an account of Captain Bell's long and valuable career as an aviator in next week's issue.

THE KING AND NAVAL AERONAUTICS.

The "Morning Post" correspondent, in an account of the King's recent visit to the Grand Fleet, writes on July 23rd :—

Men in khaki on board men-of-war look as odd as civilians, but since the Royal Air Force absorbed the Royal Naval Air Service they have become a familiar spectacle in certain ships. The Navy-that-Flies has changed its dress, but not its habitat, and the Grand Fleet still has its complement of aerial scouts. One of the aeroplane-carriers which was inspected by the King to-day acted as the floating aerodrome for the men who raided the Tondern Zeppelin sheds last Friday (July 19th) and the two officers who were decorated yesterday, Capt. Smart and Capt. Dickson, were to have made a flight from her, but circumstances prevented it. One of these two officers accompanied the first flight, which set off from the aeroplane-carrier in the small hours before dawn. Day had broken faintly when he reached the land, and he swooped down over the town to make sure of his objective. The Germans appear to have been taken entirely by surprise. No barrage was put up; indeed, not a gun was fired at the raiders, though one of them was so low that as he flew above the main street of the town he saw a man who was driving a farmer's cart look up and wave a friendly greeting to him. (The "Daily Chronicle" states that this officer was Capt. Dixon).

The launching of aeroplanes from warships is rapidly progressing. The King watched the departure of one this morning from the launching platform over the superstructure of the "Lion," the famous flagship of the Battle Cruiser Squadron. It was a very fast little scouting machine, piloted by Lt. Whates, R.A.F. Her engine was started, and she was held in place by a squad of sturdy Marines. A Marine officer stood by with a flag in his hand, and when the pilot gave the signal he let the flag drop. The machine ran along the short platform, passed almost over the King's head, and dipped towards the water in salute. Then the pilot put her nose up sharply and she rose a couple of hundred feet in a flash. It looked a daring performance, but it was very gracefully carried out.

[It is almost unbelievable that so primitive a method of launching should still be permitted. Slip-catches were quite commonly used so far back as 1912, and perfectly good catapult devices were invented and patented at about the same date. It seems that the R.N.A.F. (or whatever it is called) needs a wider outlook on aeronautical engineering.—Ed.]

Apropos the King's visit to the Grand Fleet on July 22nd, the "Times" correspondent states that among those whom the King decorated on board the flagship were Capt. Bernard Smart, R.A.F., with a bar to his D.S.O., and Capt. W. F. Dickson, R.A.F., with the D.S.O., for their share in the recent raid on Tondern.

ANOTHER AIR MEMBER.

The North Paddington Association of the National Party have unanimously adopted Capt. Gordon Aston as the prospective National Party candidate for that constituency at the next election.

Capt. Wilfred Gordon Aston is well known to many people concerned with aviation, having been joint editor of the old "Aero" in conjunction with the present editor of this paper. His writings and drawings in those days were by far the best things of their kind which have appeared in the aeronautical press. He is an engineer of remarkable ability, and his cleverness in this and other directions built up for him a fine position in the motor industry before the war, which he sacrificed on the outbreak of war in order to enlist in the Army. Soon afterwards he was withdrawn from the infantry and asked to take a commission in the A.S.C., in which he did valuable work, till he was transferred to aeronautical work of still higher value. As a philosopher, a humorist, and a man of affairs, he should be of great value in the House of Commons, if the free and independent voters of Paddington have the sense to elect him.

THE DEATH OF A REFORMER.

News has been received in Canterbury that Major Bennett-Goldney, M.P., has died at Brest as the result of a motor-car accident.

Francis Evans (afterwards Bennett-Goldney) was the second son of the late Mr. Sebastian Evans, and was born at Moseley, near Birmingham, in 1865. He was educated privately at Bournemouth and in Paris. It was in conformity with the will of a relative that he assumed the name of Bennett-Goldney. For some years Mr. Bennett-Goldney resided with his parents at Abbott Barton, Canterbury, and there he displayed a keen interest in the affairs of the cathedral city. He found time for much municipal work, and for several terms held the office of Mayor of Canterbury. He was an honorary Freeman and Alderman of the city and honorary director of the Royal Museum at Canterbury, and a governor of the Kent and Canterbury Hospital, as well as of the Simon Langton Schools. His interests were varied. His artistic tastes were widely known. A Fellow of the Society of Arts, Mr. Bennett-Goldney's archæological knowledge was of great use to him when he worked in the Dublin Heralds' College under Sir Arthur Vicars.

In his younger days he held a captain's commission in one of Militia Battalions of the Middlesex Regiment, and he was able to bring that experience into play when he was appointed to the General Staff early in the present war. It was of material use to him when he became an Assistant Military Attaché, with the acting rank of major, in May this year, at the British Embassy in Paris.

Major Bennett-Goldney, who sat in the House of Commons for Canterbury, first contested that seat in January, 1910. He stood as an Independent Unionist against Mr. (afterwards Sir) J. Henniker Heaton, Unionist, and Mr. W D. Woodcock, Liberal, and was beaten by Mr. Henniker Heaton by only 21 votes. In the election of December of 1910 he again stood as an Independent Unionist, and on that occasion was elected, beating his Unionist opponent by about 500 votes and the Liberal candidate by over 1,000.

So far one quotes, with due acknowledgments, from that well-informed paper the "Morning Post." Major Bennett-Goldney's connection with aeronautics is of recent date, but was of a nature to entitle him to the esteem and regard of all concerned with Service aviation, and therefore he deserves to be remembered with deep regret for his loss.

He was one of the moving spirits in the agitation early in 1916, which resulted in the Air Enquiry Committee and later in the formation of the Air Board which developed into the Air Ministry. During that period he displayed not only the keenest interest in aviation, but a remarkably quick grasp of the subject and a high order of intelligence unusual in a Member of Parliament. He devoted much time to studying the needs of the Flying Services and prepared his case to lay before the Air Enquiry Committee so well that his evidence, calmly and judicially set forth carried as much weight as any of that which was taken, and more than the majority of the evidence. His death deprives the Flying Services of a valuable and valued friend who would, in case of need, have been prepared again to devote himself to the welfare of our Service aviators.—C. G. G.

THE WOMEN'S ROYAL AIR FORCE.

The Air Ministry announce that it wishes to recruit at once a large number of women officers for the Women's Royal Air Force.

The duties of these officers will be to supervise and control the W.R.A.F.S. employed at various camps in the United Kingdom.

The scale of pay is as follows :—

Hostel Administrator	In charge of Hostel...	£175*
Deputy do.	Do.	£150*
Assistant do.	Do.	£120*
Technical Superintendent	At R.A.F. Units	£150*
Assistant Technical do.	Do.	£120*
Quartermistress	Attached to Hostel or R.A.F. Unit	£150*
Assistant Quartermistress	Do.	£120*

* And quarters.

In case of officers who are entitled to free quarters, and are not able to obtain accommodation in Government hostels or billets, a lodging allowance of 2s. 3d. a day will be given in lieu.

Women of good education and between the ages of 25 and 45 are invited to apply. All candidates will be required to appear before a W.R.A.F. Selection Board and Medical Board, which for the convenience of applicants will be held in various parts of the country. All particulars may be had by written application to either the Headquarters of the W.R.A.F., Mason's-yard, St. James's, S.W.1, or to the Women's Professional Register, Queen Anne's Chambers, S.W.1, or to the Divisional Officers of the Employment Exchange Department, Doncaster, Newcastle, Manchester, Bristol, Cardiff, Birmingham, Edinburgh, or Dublin. Envelopes should be marked outside, "Officer, W.R.A.F."

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FROM THE "LONDON GAZETTE."

ADMIRALTY, July 23rd.

The following awards have been made for services in the operations against Zeebrugge and Ostend on the night of April 22nd-23rd :—

THE DISTINGUISHED SERVICE MEDAL.

H.M.S. "VINDICTIVE."

Ch. Mech. C. Armitage, R.N.A.S., O.N. F6981.

H.M.S. "DAFFODIL."

Ldg. Mech. G. Pemberton, R.N.A.S., O.N. F13706.

PICKET BOATS, MOTOR LAUNCHES AND MOTOR BOATS.

Air Mech., 1st Gr., J. F. D. Shrewsbury, R N A.S., O.N. F20056.

The following officers and men were mentioned in dispatches by Vice-Admiral Sir Roger J. B. Keyes, K.C.B., C.M.G., C.V.O., D.S.O., Commanding the Dover Patrol, for distinguished services on the night of April 22nd-23rd, 1918 :—

Maj. (temp. Lt.-Col.) F. A. Brock, O.B.E., R.A.F. (killed in action),
Maj. (temp. Lt.-Col.) **J. T. Cull, D.S.O. R.A.F.**
Air Mech. R. R. Entwistle, R.N.A.S., O.N. F39326.
Air Mech. W. H. Gough, R.N.A.S., O.N. F19842.
Ch. Air Mech., 2nd Cl., W. G. Ryan, R.N.A.S., O.N. F48864.
Air Mech., 1st Cl., K. H. Thow, R.N.A.S., O.N. F12770.
Air Mech., 1st Cl., G. Warrington, R.N.A.S., O.N. F26702.

The following officers were mentioned by Vice-Admiral Sir Roger Keyes for services in connection with the preparatory work of the operations :—

Col. (temp. Brig.-Gen.) C. L. Lambe, C.M.G., D.S.O., R.A.F.
Lt.-Col. F. C. Halahan, M.V.O., D.S.O., R.A.F.
Maj. (temp. Lt.-Col.) P. F. M. Fellowes, D.S.O., R.A.F.

AIR MINISTRY, July 23rd.

R.A.F.—The follg. temp. appt. is made at the Air Ministry :—Deputy Director.—(Graded for purposes of pay as Staff Officer, 1st Cl.).—Lt.-Col. R. J. Armes, and to be temp. Col. while so empld., May 21st

Capt. (temp. Maj.) C. H. Rowe relinquishes his appt. as S.O., 2nd Cl., May 23rd.

The follg. temp. appts. are made :—Group Comdr.—Maj. (temp. Lt.-Col.) W. G. S. Mitchell, D.S.O., M.C., and to be temp. Col. while so empld., July 9th.

Director.—Maj. (temp. Lt.-Col.) T. D. Mackie, and to be temp. Col. while so empld., April 1st.

Staff Officer, 1st Cl.—Maj. S. B. F. Carter, and to be temp Lt.-Col. while so empld., April 1st.

Staff Officer, 2nd Cl.—And to be temp. Maj while so empld. :—Capt. R. A. Reid, Lt. (temp. Capt.) D. Goad, Capt. J. E. Arrol-Hunter, Lt. (temp. Capt.) J. R. Harland, Lt. (temp. Capt.) F. W. Newman, Lt. (temp. Capt.) E. W. F. Cherry, April 1st

Staff Officer, 3rd Cl.—And to be temp. Capt. while so empld. :—Lt. (temp. Capt.) A. Clayton, April 1st; Lt. J. G. Connell, April 15th; Sec. Lt. W. G. Webber, April 23rd; Lt. (temp. Capt.) G. F Pallott, May 1st; Lt. A. G. Stradling, May 27th; Lt. W. Reid, May 28th; Lt. W. Lingard, June 1st; Lt. J. W. Jennings, June 21st.

Staff Officer, 4th Cl.—And to be temp. Lt. while so empld. :—Sec. Lt. G. H. Brown, Sec. Lt. G. L'E. Smith, Sec. Lt. W. J. Ryder, April 1st.

FLYING BRANCH.—To be temp. Majs. while empld as Majs. (A. and S.) :—Lt. (temp. Capt.) H. S. Kerby, D.S.C., May 16th; Capt. D. Gilley, June 24th; Capt. C. J. W. Darwin, July 2nd, Capt. O. T. Boyd, from (S.O.), July 7th; Capt. C. M. Crowe, M.C., July 9th, Lt (temp. Capt.) C. H. Darley, July 11th; Lt. (temp. Capt.) W. G. Barker, D.S.O., M.C., July 14th; Lt. (temp. Capt.) W. E. Gardner, July 15th.

Lt. (Hon. Capt.) W. G. Piggott to be Maj. while empld. as Maj. (K.B.), July 9th.

Lts. to be temp. Capts. while empld. as Capts. (A. and S.) :—E. McN. Hand, May 31st; J. G. Burchett, June 22nd; W. A. Leslie, June 24th; G. E. P. Elder, June 25th; G. C. Gardner, June 28th; S. F. Pickup, June 29th; W. G. Preston, June 30th; R. A. Way, July 1st; W. E. Joseph, G. A. Dixon, R. E. Dubber, July 5th; R. O Williams, July 6th; R. D. Cayley, A. S. Kelly, H. L. W. Flynn, (Hon. Capt.) W. H. Strettel-Milier, (Hon. Capt.) J. W B. Grigson, July 8th; G. O. Lighthouse, July 9th; F. R. Walker, July 12th; (Hon. Capt.) G. A. Cox, W. A. Southey, R. C. B. Brading, July 14th; W. R. Irwin, July 26th; C. Bowman, C. L. Hobbs, July 17th. To be temp. Capts. while empld. as Capts. (K.B.) :—Lt. (Hon. Capt.) H. N. Whiting, June 30th; Lt. J. E. Burgess, July 6th; Sec. Lt. (Hon. Lt.) J. C. Smith to be Lt., from (T.), July 18th. The following are granted temp. commns. as Sec. Lts (A. and S.) :—G. T. Ritchie (Lt., S. African Forces), and to be Hon. Lt., J. S. Smith (Lt., S. African Forces), and to be Hon. Lt., May 2nd; B. Jacobs, M.C. (Lt., E. Kent R., Spec. Res.), and to be Hon. Lt., May 29th.

Flt. Cadet W. R Ayling is granted a temp. commn. as Sec. Lt. (A. and S.), May 31st.

The follg. Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A. and S.) :—T. Powers, June 8th; R. D. Butler, June 11th; A. Douglas, J. Macintyre (date of first commn., 23/2/18), June 14th; S. J. Osborne, June 19th; G. Mathewson, June 25th; E. A. Kenny, June 30th.

A. G. McI. Jennings, M.C. (temp. Sec. Lt., Northd. Fus.), is granted a temp. commn. as Sec. Lt. (K.B.), June 15th

Lt. E. E. Dafforn to be Lt. (O.), from A. and S., June 28th.

The follg Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (Obsr. Officers) :—A. S. Withers, May 17th; J G. Quinton, E. Fearnside, June 12th; H. Dyson, June 14th; W. B. Crouch, June 15th; W. E. Hall, June 25th; J S. Warry, June 26th; E. S. Noble, S. Thomas, June 29th; J. Hunter, July 6th.

Sec. Lt F. Thomasson to be Sec. Lt. (O.), from T.), June 13th.

The follg are granted temp. commns. as Sec. Lts. (Obsr. Officers :—W. Richards (Sec. Lt., Lond. R., T.F.), June 11th; F. Pascoe (Sec. Lt., Welsh R., Spec. Res.), F. H. Chainey (Sec. Lt., Suff. R., T.F.), June 12th; S. Soothill (temp. Sec. Lt., Lab. Corps), G. R. Barker (Sec. Lt., Middx. R., T.F.), June 15th; L. G. Macklin (temp. Sec. Lt., Shrops. L.I.), M. A. McKenzie, M.C. (Sec. Lt., R. Sco. Fus.), G. E. Davis, M.C. (Lt., R. Fus., Spec. Res.), and to be Hon. Lt., June 22nd; G. M. Lawson, M.C. (Lt., Leic. R., T.F.), and to be Hon. Lt., L. Egan (temp. Sec. Lt., 2 S.A. Inf.), H. T. Melville (temp. Lt., Gen. List, New Armies), and to be Hon. Lt., June 25th; A. J. R. Napier (Lt., Ches. R.), and to be Hon. Lt., June 28th; W. A. S. Blucke (Lt., Dorset R., Spec. Res.), and to be Hon. Lt., W. L. W. Dryland (Lt., Northn. R.), and to be Hon. Lt., A. G. Pryke (temp. Sec. Lt., attd. R. Berks R.), June 29th; J S. Blandford (Sec. Lt., E. Kent R.), July 5th; E. H. Ward (temp. Sec. Lt., E. York. R.), R. A. Thomas (temp. Sec. Lt., R. W. Fus.), G. H. E. Kime (temp. Sec. Lt., attd. Essex R.), R. G. Bennett (temp. Sec. Lt.), Reserve Household Bn.), July 6th; H. Burns (temp. Sec. Lt., R. Dub. Fus.), July 15th.

The follg. Flt. Cadets are granted temp. commns as Sec Lts. (Obsr. Officers) :—J. S. Downard, July 12th; B. A. Levey, F. C. Jeffkins, July 18th; D. V. Clawson, R. J. Evans, R. H. Gillespie, R. H. Goodwin, E. E. Barcomb-Harrison, A. G. Malcolm, P. Marsland, H. Scott, R. Scarterfield, A. E. Shirley, R. L. H. Valentine, M. De Verteuil, M. Wallace, G. V. Young, L. P. B. Faddy, July 20th; J. M. Scott, C. H. B. Stevenson, G. H. Stephenson, L. W. G. Stagg, W. Shaw, H. G. Ramsey, C. P. Wogan-Browne, July 21st; G. Dietrich, A Wichelow, July 22nd.

Lt. H. D. Lysons (Lt., R.A.) relinquishes his commn. on ceasing to be empld., May 30th.

The follg. Lts. relinquish their commns. on account of ill-health caused by wounds, and are granted the hon rank of Lt. :—A. A. Cameron, G. H. Haydock, July 24th.

The follg Lts. relinquish their commns. on account of ill-health contracted on active service and are granted the hon. rank of Lt. :—A. E. C. Y. Bramble, J. G. Woodley, G. H. Ellis, July 24th.

Lt. G. Carpenter relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lt., July 24th.

Sec. Lt. S. J. Brewer relinquishes his commn , having been found permanently unfit as pilot or observer, July 24th.

The surname of Sec. Lt P. Collison is as now described and not as in "Gazette," July 12th.

ADMINISTRATIVE BRANCH.—Capt. D. C. L. Speed to be temp. Maj. while empld. as Maj., May 31st.

To be temp. Capts while empld. as Capts :—Lt. W H. Trinder, May 31st; Sec Lt. (temp. Capt.) J. V. L. Hall, June 3rd; Lt. G. H Watts, June 22nd; Lt. (temp. Capt.) H. N. Nowell, from (S.O.), Lt. S. H. Twining, Lt. G. F. Wilson, July 8th.

Lts. to be Lts. :—W. A. Watson, from (A and S.), April 1st; J. P. Greenwood, from (O.), July 4th; L. B. Goodyear, from (O.), July 15th; (Hon. Capt.) J. W. Higgins, from (O.), July 22nd.

To be temp. Lts. while empld as Lts. :—Sec. Lt. (Hon. Lt.) A. E. Biggs, May 31st; Sec. Lt. (Hon. Capt.) G. B. Lockwood, from (T.), July 10th; Sec. Lt. J. Mytton, July 12th

G. F. Law (late Sec. Lt., A.S.C.) is granted a temp. commn. as Lt., June 1st.

A. F. Douglas (Maj., Sco. Rif., Spec. Res.) is granted a temp. commn. as Lt. and to be Hon. Maj., July 15th.

Lt. M. C. Milson, M.C., relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lt., July 24th.

Sec. Lt. T. W. Barlow relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., July 24th.

Sec. Lt. H. Brown relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., July 24th

Sec. Lt. W. N. Mitchell resigns his commn., July 24th.

The follg. Sec. Lts. (late Gen. List, on prob.) are confirmed in their rank as Sec. Lts., Admin. :—G. I. Griffiths, T. H. Jones., May 29th.

The follg. are granted temp. commns. as Sec. Lts. :—T. G. Lewis (late Hon. Sec. Lt., Gen. List), April 23rd, E. N. Thomas (temp. Capt., Lab. Corps), and to be Hon. Capt., J McAllister (Lt., R. Sco. Fus., T.F.), and to be Hon. Lt., E G. T. Lowe (temp. Lt., Som. L.I.), and to be Hon. Lt., A. L. G. Young (Lt., Lond. R., T.F.), and to be Hon. Lt., H. Coggins (Sec. Lt., Lond. R., T.F.), May 29th; R. E Roberts (temp. Sec. Lt., attd. Welsh R.), June 2nd

The notification in "Gazette" July 12th concerning E. Roebuck is cancelled.

The notification in "Gazette" July 9th concerning H. G. Cogle is cancelled.

Sec. Lt. G. Barfoot-Saunt to be Lt. while empld as Lt., July 1st.

Lt (Hon. Capt.) S. Hooper (Hon. Capt.), from (A. and S.), July 8th.

Lt. H. E. F. Saunders to be Lt., from (A and S.), July 10th.

TECHNICAL BRANCH.—The follg. to be temp. Lt.-Cols. while empld. as Lt.-Cols. :—Capt (temp. Maj.) W. J. D. Pryce, June 11th; Maj. J. H. Hills, from (S.O.), July 1st; Maj. B. F. Moore, July 12th.

Capt. H. E. Hickmott to be temp. Maj. while empld. as Maj

Capt. (temp. Maj.) T. M. Barlow to be Capt., from (Ad.), and to retain his temp. rank while empld as Maj., May 16th.

The follg. Sec. Lts. (late Gen. List, R.F.C., on prob) are confirmed in their rank as Sec. Lts. :—F. J. Harrington, May 1st; R T. Smith, May 18th; F. J. Quinlan, W. Teer, J. J. Honan, A. E. Gooch, R. W. B. Murch, June 1st; G. A. Roper, June 2nd; W. L. Pike, M.C., June 20th.

W. G. P. Cobbett (temp. Capt., R.E.) is granted a temp. commn. as Sec Lt., and to be Hon. Capt., June 20th.

Lt. N. Cox-Walker to be Sec. Lt., and to be Hon. Lt., from (O.), June 1st.

Lt. E. D. Inskip, from (Fd.), to be Sec. Lt. (Hon. Lt.), June 21st.

Maj. F. C. H. C. Sinclair relinquishes his commn. on account of ill-health, and is granted the hon. rank of Maj., July 24th.

Lt. E. G. Thompson relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lt., July 24th.

Sec. Lt. G. F. Pugsley relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., July 24th.

Medical Branch.—L. S. Hooper (temp. Capt., R.A.M.C.) is granted a temp. commn. as Capt., and to be temp. Maj while specially empld., July 22nd.

Memoranda.—Col. (temp. Brig.-Gen.) J. D. Edwards (Capt., R.N.) relinquishes his commn. on return to R.N., July 5th

Capt. J. S. D. Berrington to be temp. Maj. without the pay and allowances of that rank while specially empld., July 24th.

Maj. (temp. Lt.-Col.) R. F. Drury, O.B.E., relinquishes his commn. on ceasing to be empld., and is granted the hon. rank of Lt.-Col., June 24th.

Maj. B. Hopkinson, C.M.G., to be temp. Col, while empld. at Ministry of Munitions, May 24th.

The follg. to be temp. Lt.-Cols. while empld at Ministry of Munitions:—Capt. H. W. S. Outram, Capt. R. H. Verney, April 1st; Maj. W. D. Beatty, Capt. J. Romanes, Capt. A. H. W. Skitt, Maj. H. T. Tizard, May 24th.

The follg. to be temp. Majs. whilst empld. at Ministry of Munitions:—Capt. V. S. Brown, Capt. P. Bishop, M.B.E., Capt. G. B. Bulman, Capt. M. O. Darby, Capt. C. H. Drabble, Capt. A. T. Evans, Capt. G. Gude, Lt. A. C. Hartley, Capt. T. G. Hull, Capt. T. G. Leith, Sec. Lt. J. H. Ledeboer, Capt. J. J. Meakin, Capt. R. H. Mayo, Capt. A. McAlister, Capt. J. S. Nicholson, Capt. W. Park, Lt. (Hon. Maj.) H. W. Prance, Capt. S. J. Radford, Capt. T. M. Rogers, O.B.E., Capt. D. B. Sanders, Capt. W. A. C. Sandford-Thompson, Capt. R. V. Wynn, April 1st; Lt. A. W. Crombie, Lt. (Hon. Capt.) G. Dennison, Lt. (Hon. Capt.) C. L. Hardy, Capt. D. H. Kennedy, Lt. (Hon. Capt.) W. Sillem, Capt. C. J. Stewart, Lt. S. Whitechurch, Capt. C. W. C. Wheatley, May 24th.

Hon Capt. F. B. Halford to be Hon. Maj whilst empld. at Ministry of Munitions, May 24th.

The follg. to be temp. Capts. whilst empld. at Ministry of Munitions:—Sec Lt. C. W. Alexander, Lt. C H. T. Alston, Sec. Lt. (Hon. Lt.) C. A. Angrave, Lt. R. W. B. Billinghurst, Lt. (Hon. Capt.) S. S. Blackley, Lt. (Hon. Capt.) A. Burgess, Lt (Hon. Capt.) H. L. U. Clark, Sec. Lt. (Hon. Capt.) J. H. Cotton, Sec. Lt. (Hon. Capt.) G. H. Creighton, Lt. (Hon. Capt.) L. Crooks, Sec. Lt (temp. Lt.) W. Chapman, Sec. Lt. L. H. Clifford, Lt. J. D. Coales, Sec. Lt. (Hon. Lt.) F. A. Cobb, Lt. J. V. Collins, Sec. Lt. (Hon. Capt.) H. F. L. Dixon, Sec. Lt. E. Dodson, Lt. (Hon. Capt.) H. B. Dresser, Lt. (Hon Capt.) F. W. Elstub, Lt. (Hon. Capt.) L. G. Fenner, Lt. (Hon. Capt.) G. G. R. Fraser, Sec. Lt. (Hon. Capt.) A. W. Gillespie, Sec. Lt. (Hon. Capt.) S. V. Green, Lt. (Hon. Capt.) W. E. Grey, Lt. (Hon. Capt.) A. G. Griggs, Sec. Lt. F. M. Harding, Lt. C. A. Higgins, Sec. Lt. F. T. Hill, Lt. (Hon. Capt.) J. M. Macaulay, Lt. (Hon. Capt.) J. C. Mitchell, Lt. H. F. McLoughlin, Sec. Lt. (Hon. Capt.) J. C Murray, Sec. Lt. (Hon. Capt.) W. E. Nuttall, Lt. H. B. Neame, Sec. Lt. D. E. Rodwell, Lt. (Hon. Capt.) A. N. Robinson, Lt. (Hon. Capt.) M. F. W. Sampson, Lt. T. G. Skeats, Lt A. P. Thurston, Lt. D. F. Upjohn, Sec. Lt. (Hon. Capt.) R. Waddell, Lt. E. W. Walford, Lt. S. J. Waters, Sec. Lt H. S. Wildeblood, Sec. Lt. (Hon. Lt.) F. C. Wilkinson, Lt. F. M. Williams, Lt. F. A. Woolfe, Lt. G. J. Woods, April 1st; Sec. Lt. R. J. Anderson, Lt. J. C. Briggs, Sec. Lt. E. S. Crabtree, Lt. F. J. Collet, Lt. H. G. Day, Lt. H. S. Edgar, Sec. Lt. (Hon. Lt.) R. C. Gallop, Lt. P. M. E. Impey, Lt. L. B. W. Jolley, Sec. Lt. (Hon. Lt.) R. N. Liptrot, Sec. Lt. H. D. Lehmann, Lt. N. Martin, Lt. W. H. F. Mattinson, Sec. Lt. (Hon. Capt.) S. Morris, Sec. Lt. (Hon. Lt.) S. E. Neal, Sec. Lt. R. Neilson, Sec. Lt. (Hon. Lt.) D. A. Parsons, Lt. R. W. Patterson, Sec. Lt. F. W. M. Pedley, Lt. H. Pooley, Sec. Lt. A. F. C. Pollard, Lt. H. Rochford, Sec. Lt. G. G. Smith, Sec. Lt. N. F. Stockbridge, Sec. Lt. G. W. Y. Swanson, Sec. Lt. (Hon. Lt.) E. G. Thompson, Lt. H. S. V. Thompson, Lt. G. Urquhart, Sec. Lt. J. A. Woods, Lt. J. G. Wilson, May 24th.

War Office, July 25th

Regular Forces.—Establishments.—R.F.C.—Mil. Wing.—Asst. Instr. in Gunnery.—Graded as an Equipt. Officer, 3rd Cl.: Temp. Sec. Lt. W. S. Jamieson, Br. W.I.R., from a Flying Officer, March 25th.

Territorial Force.—Infantry.—Lond. R.: Qrmr. and Hon. Capt. H. M. Ryland relinquishes his commn. on transfer to the R.A.F., April 12th.

* * *

The following are among the decorations and medals awarded by the Allied Powers at various dates to the British Forces for distinguished services rendered during the course of the campaign. The King has given unrestricted permission in all cases to wear the decorations and medals in question:—

Conferred by the King of the Belgians.

Ordre de la Couronne.

Chevalier.

Sec. Lt. H. G. Little, S. African Heavy Art., attd R.A.F.

Croix de Guerre.

Temp. Sec. Lt. H. R. Griffin, R.F.C.
Sec. Lt. H. G. Little, S. African Heavy Art., attd. R.A.F

Ordre de la Couronne.

Officier.

Capt. (temp. Lt.-Col.) A. S. Barratt, M.C., R.F.A. and R.F.C.

Chevalier.

Lt. P. E. Biggar, Can. A.S.C. and R.F.C.
Capt. (temp. Maj.) C. H. B. Blount, M.C., R. W. Surr. R. and R.F.C.
Temp. Capt. A. E. Illingworth, R.F.C.
Capt the Hon. E. G. W. T. Knollys, Lond R. and R.F.C.
Temp. Sec. Lt. H. R. Griffin, Gen. List and R.F.C.

Ordre de Leopold II.

Chevalier.

30203 Flt. Serjt. P. A. Barrett, R.F.C. (Maiden Newton).
30212 Flt. Serjt. J. Baxter, R.F.C. (Guildford).
12228 Flt. Serjt. J. Edmond, R.F.C. (Dunmore).
3116 Serjt. W. E. Smith, R.F.C. (Bowes Park, N.).
1279 Flt. Serjt. B. W. Wright, R.F.C. (Lutterworth).

Croix de Guerre.

Capt. (temp. Lt.-Col.) A. S. Barratt, M.C., R.A. and R.F.C.
Lt. P. E. Biggar, Canadian A.S.C. and R.F.C.
Capt. (temp. Maj.) C. H. B. Blount, M.C., R. W. Surrey R. and R.F.C.
Temp. Lt. C. H. Davies, Gen. List and R.C.F.
Temp. Sec. Lt. H. Entwistle, Gen. List and R.F.C.
Temp. Lt. H. O. Hope, Gen. List and R.F.C.
Temp. Capt. A. E. Illingworth, R.F.C.
Capt. the Hon. E. G. W. T. Knollys, Lond. R. and R.F.C.
Temp. Capt. G. F. Lines, M.C., Gen. List and R.F.C.
Temp. Capt. W. B. Tisdall, Gen. List and R.F.C.
99149 2nd Cl. Air Mech. R. T Ainsworth, R.F.C. (Canterbury).
30203 Flt. Serjt. P. A. Barrett, R.F.C. (Maiden Newton).
30212 Flt. Serjt. J. Baxter, R.F.C. (Guildford).
15490 Serjt. P. Blackburn, R.F.C. (Blackburn).
12228 Flt. Serjt. J. Edmond, R.F.C. (Dunmore).
13509 1st Cl. Air Mech. D. French, R.F.C. (Camberwell, S.E.).
29039 1st Cl. Air Mech. E. Gomersall, R.F.C. (Morley).
27292 1st Cl. Air Mech. P. James, R.F.C. (Cricklewood).
7228 1st Cl. Air Mech. C. H. McCarthy, R.F.C. (Rotherhithe, S.E.).
1279 Flt. Serjt. B. W. Wright, R.F.C. (Lutterworth).

War Office, July 26th.

The King has been pleased to approve of the following awards to the following officers and warrant officers in recognition of their gallantry and devotion to duty in the field:—

A Bar to the Distinguished Service Order.

Temp. Capt. R. M. Drummond, D.S.O., M.C., R.F.C.

He attacked single-handed a formation of six enemy scouts, and brought down one, which was wrecked on striking the ground. He was then attacked by the remainder, and succeeded in bringing down one out of control before he himself, owing to engine trouble, was forced to land. He got the engine going again, and, though stopped by engine trouble on four occasions, he managed to get back to his own lines, thus evading his pursuers. His performance was a gallant and successful one. (D.S.O. gazetted March 26th, 1918.)

Temp. Lt. (temp. Maj.) C. F. A. Portal, D.S.O., R.E., Spec. Res., and R.A.F.

During a period of four months, chiefly under adverse weather conditions, he repeatedly carried out successful raids by day and night, his ingenuity and daring enabling him to drop many tons of bombs on important enemy posts. One night he crossed the lines five times, only landing between each flight to replenish with bombs Another day he took on single-handed five enemy machines, and drove down three of them—a most gallant and splendid feat. On another day, despite thick mist, he registered one of our batteries on an enemy battery, causing the destruction of one pit and obtaining one fire and two explosions; and another day, flying for 5¼ hours, he carried out two very successful counter-battery shoots, observing 350 rounds. He has always set a most magnificent example to the squadron under his command. (D.S.O. gazetted July 18th, 1917.)

The Distinguished Service Order.

Temp. Lt. J. E. G. Mosby, R.A.F.

Whilst on an artillery patrol he was attacked by three enemy machines, two from the front and one from the rear. He engaged and drove off the latter, but was hit in the abdomen, and when he turned to engage the others his pilot was hit and instantly killed. Although his machine fell out of control from 3,000ft. to 1,000ft., he continued to engage them, and was again hit in the abdomen. But he succeeded in driving them off, and though his machine again became out of control he righted it and safely landed it at his aerodrome. He showed indomitable pluck, both during an unequal contest and in determining to land his machine without injury, although nearly unconscious from loss of blood.

Lt. (temp. Capt.) D. F. Stevenson, M.C., Yeo. and R.A.F.

For conspicuous gallantry and devotion to duty when carrying out low-flying reconnaissances and contact patrols, under very heavy machine-gun, rifle, and anti-aircraft fire. In his patrols, often lasting many hours, and in bad weather conditions, he attacked enemy infantry, transport, and batteries from a low level, using his machine-gun and dropping bombs, frequently returning with his machine riddled with bullets, and the information he obtained was quite invaluable. His cheerful spirit, consistent dash, and fearlessness, and his magnificent work have set a splendid example to all in his squadron, and greatly encouraged them at a time when the casualties in it were extremely heavy.

A Second Bar to the Military Cross.

Lt. (temp. Capt.) G. E. H. McElroy, M.C., R.G.A. and R.F.C.

While flying at a height of 2,000 feet he observed a patrol of five enemy aircraft patrolling behind the lines. After climbing into the clouds, he dived to the attack, shot down and crashed one of them. Later, observing a two-seater, he engaged and shot it down out of control. On another occasion he shot down an enemy scout which was attacking our positions with machine-gun fire. He has carried out most enterprising work in attacking enemy troops and transport, and in the course of a month has shot down six enemy aircraft, which were seen to crash, and five others out of control. (M.C. gazetted March 26th, 1918.) (First Bar gazetted April 22nd, 1918.)

A Bar to the Military Cross.

Lt. (temp. Capt.) J. Gilmour, M.C., A. and S. Highrs. and R.A.F.

For conspicuous gallantry and devotion to duty when engaging hostile aircraft. Within a week he crashed to the ground four enemy machines, and at all times, when on patrol, he never hesitated to attack any enemy in sight. His consistent dash and great fearlessness have been worthy of the highest praise. In all he has ten hostile machines to his credit. (M.C. gazetted May 26th, 1917.)

Capt. A. W. F. Glenny, M.C., A.S.C., attd. R.A.F.

For conspicuous gallantry and devotion to duty, both in reconnaissance and as an artillery observer. On one occasion, although shot down, he brought in valuable information. On several occasions he conducted successful knock-out shoots with various batteries, obtained excellent photographs, and did much work of a very high standard. (M.C. gazetted Sept. 17th, 1917.)

Temp. Lt. A. W. Hammond, M.C., R.E. and R.F.C.

Whilst attacking hostile troops at about 500 feet he was encountered by eight triplanes, which dived from all directions, firing their front guns. He fired bursts at each machine in turn, shooting three of them down out of control. He was wounded himself six times, but continued the action until his machine caught fire. The pilot, although wounded five times, with great skill and coolness managed to climb to the left hand bottom plane and controlled the machine from the side of the fuselage, side-slipping to the ground. The machine crashed in "No-Man's Land," and the pilot managed to extricate him from the flames and dragged him to a shell hole, from which they were rescued by the infantry. (M.C. gazetted April 22nd, 1918.)

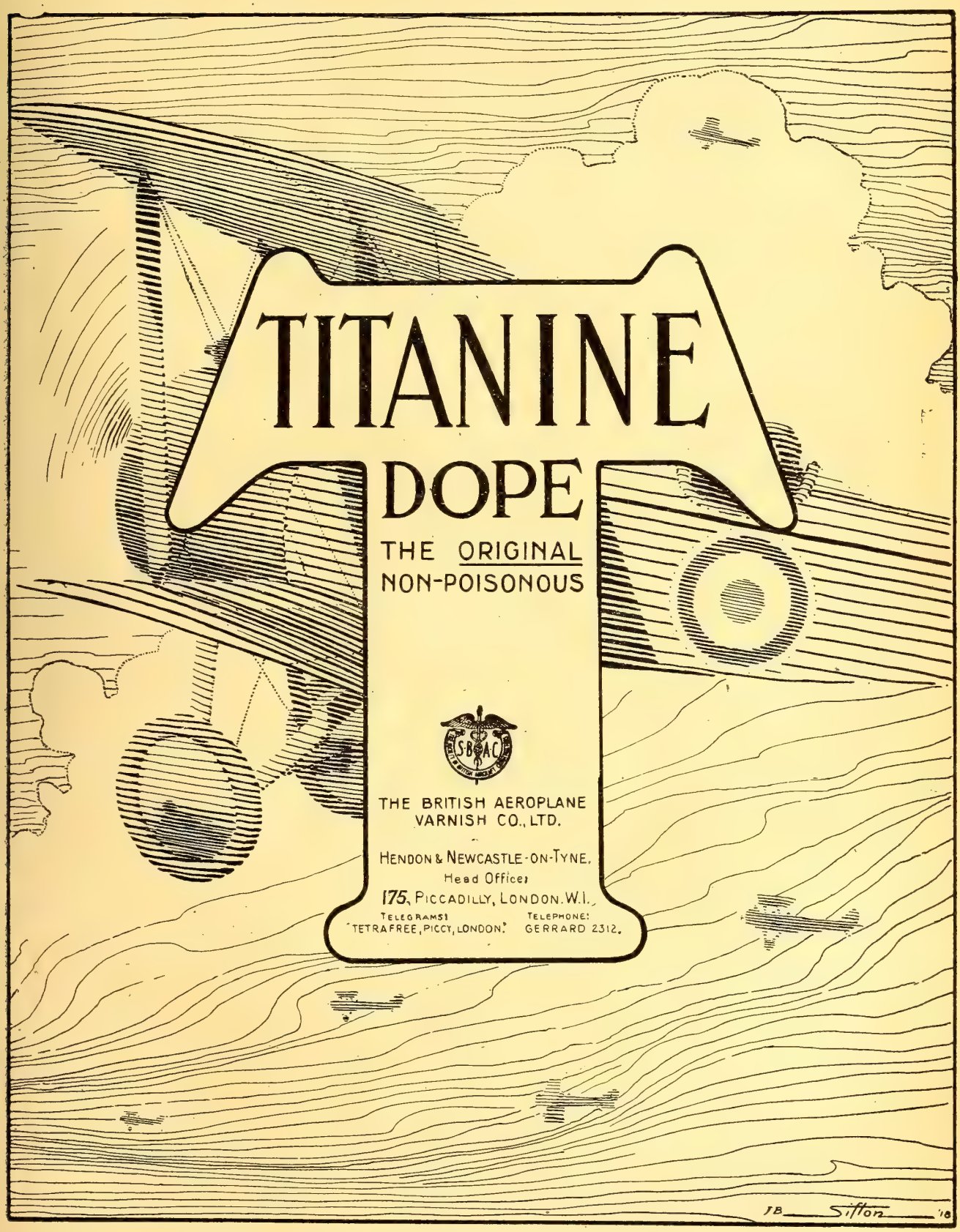
Temp. Sec. Lt. L. C. Hooton, M.C., Gen. List and R.A.F.

When flying at 1,000 feet his petrol tank was shot through and immediately afterwards his left aileron control shot away. He tried to turn his machine without success, and it was side-slipping down out of control into the enemy's lines. Realising the danger, his observer climbed out on the right wing, enabling him to turn and land just within our lines. It was owing to his extraordinary coolness that he was able to land the machine in safety. He has also done fine work on reconnaissance and in attacking enemy infantry. (M.C. gazetted June 22nd, 1918.)

Temp. Capt. A. H. Peck, D.S.O., M.C., R.F.C.

While patrolling at a height of 14,000 feet he observed a formation of five enemy aircraft attempting a reconnaissance. He attacked the top machine, a scout, and drove it down out of control. He then attacked the second scout, which he also drove down out of control. He finally attacked a two-seater, and so quickly that he got to close quarters and opened fire with both guns. That, too, he sent down out of control. His performance was a splendid one, besides being costly for the enemy. (M.C. gazetted Jan. 18th, 1918.)

(*Continued on page 421.*)


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(SECOND SERIES.)

BY R. P. HEARNE.

XIII.—THE REGENT CARRIAGE COMPANY.

The more one studies the position gained by British air power in the war the more is one convinced that but for our large commitment to motoring, and to motoring of the most elaborate style, we should never have made such striking headway in aircraft production when the call came. We were a sport-loving people, we liked good horses, well-built equipages, smooth and silent motors. We carried the cult of quality almost to extremes.

When before the war you strolled in Bond Street and the Park you could have hardly failed to admire the elegance of the motors in which the "idle rich" were conveyed. How the luxury tax crank of to-day would have busied himself then in framing tariffs and schedules for the due punishment of every designer, builder, and user of a motor-car which deviated from the Spartan simplicity of the original Ford!

Of course, this extravagance must have helped to bring on the war! This sinful love of comfort, refinement, and good taste told the Germans that we were flabby and degenerate, and that Gott must purify us by war!

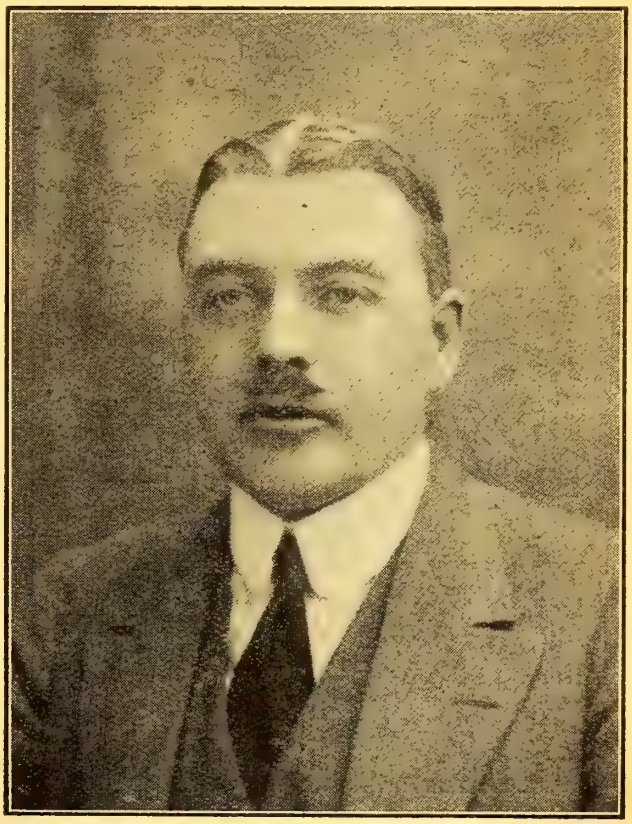
You still read and hear arguments of this kind, and they sometimes come from British sources. The most stupid thing about them is the idea created that before the war Germany was free from the luxury taint which was alleged to be sapping us.

I am not out to defend luxury or even to define it (and the former is easier than the latter). But I do hope our people will get rid of the cant that as luxury was alleged to have brought about the fall of the Roman and other empires, so, too, it was sapping the British Empire, and that the Huns as the instruments of an angry Deity were appointed to punish us.

Anybody who has lived in Germany must know that the Vaterland was rotten with the most putrid forms of rococo and rubbishy "luxury" before the war. It was a sham luxury: nothing more than vulgar extravagance and beastly degeneracy. Her Junkers and army contractors are still wallowing in it. We had nothing like it here, and I hope we never shall.



Mr. Peter Arondel.



Mr. Myles Scarff.

Where Luxury is Useful.

All of which doesn't seem to have much to do with aircraft. But, in fact, it has. Leaving aside a comparison between British and German luxury in other respects, it may be said that our carriages, both horsed and motor, expressed a refinement, a grace-

fulness, and freedom from garishness and vulgarity which was in striking contrast to the vehicles of the rich Germans. As a matter of fact, the Germans did not care much about motoring. Their blatant style ran more to circus wagons.

Beyond a doubt the British carriage-making industry was the finest in the world before the war. Not only did it work to good designs, but it created structures free from shoddiness, and soundly built up in every particular. With the staunchness there was lightness, too, brought about by good workmanship and the use of choice material.

Some of the nicest motor bodies built in this country before the war were turned out by the Regent Carriage Company. There were men at work here who had the old-fashioned craftsmanship handed down to them from the days when woodworking was a great British art—the days before we imported our furniture from the East End.

When the war came it looked as if works like the Regent Carriage Company should close down. It had not struck the Big-Wigs that many more aeroplanes would be required; or, if that thought had been conceived, it did not develop to the conclusion that skilled woodworkers might be useful in making aeroplanes.

If the Regent Carriage Company had not after a struggle for existence gone on to motor-lorry bodymaking they could only have obtained a contract for turning out ammunition boxes. Anyhow, the firm had needed some pulling together, and the war had brought the difficulty to a crisis.

Mr. Myles Scarff came on the scene at this juncture. He had the doubly difficult task of putting new life into a concern to which the war had apparently given the finishing blow. Mr. Scarff is a very genial and philosophic kind of Irishman of the type not well known to English people. He took up his task in a very unconventional way.

The popular idea of pulling a moribund factory together and getting it going on war work would suggest a leader of the Hindenburg pattern—a big, bullying, blustering kind of fellow who would hustle, sir, hustle.

I don't think that any factory was ever reorganised more quietly and more gently than the Regent Works when Mr. Scarff took control. And to-day it is busily producing on a grand scale aircraft work which in use has won marked esteem.

Quality Pays.

The question of quality in aircraft work is of the utmost importance, for in the stress of war requirement and usage the margin of safety is often deeply cut into. Much of our air success has been due to the excellent work put into our machines by skilled artisans who have been accustomed to turn out fine jobs long before the A.I.D. was invented. I have never seen better fuselage work than in this factory, and the rate of production proves that the skilled craftsman can give satisfactory output.

In the Regent factory one may find not only British craftsmen, but highly skilled men from Belgium, France, and other Allied countries. This cosmopolitan element would lead to additional trouble in the ordinary way if Mr. Scarff were not his own genial self; and if he did not have in Mr. Peter Arondel an invaluable colleague who has had wide experience in continental factories.

Handling Men.

Up to the time of my interview with Mr. Scarff his firm had had no trouble with his men. I asked him for the secret, and he said it was simply due to the fact that any worker had the right to come straight to him or Mr. Arondel if he felt there was a grievance to be remedied. I did not see any "hand" come to Mr. Scarff with a petition or a threat to strike during my long visit, but I fancy that if the most pugnacious trouble-maker stormed in he would be greeted in a friendly way by Mr. Scarff, listened to attentively, hear a good joke or two cracked, and by an inexplicable process be won over gradually to the idea that it would be a shame to make trouble with such a boss.

I don't know if any of my readers have ever met Mr. Harvey du Cros, sen., the founder of the Pneumatic Tyre Industry. He was in his day the most tactful and diplomatic man I have ever known, and his method of handling obstreperous people was simply marvellous. Mr. Scarff is related to the du Cros family, and he seems to have acquired some of the skill of the great Franco-Irishman.

Aeroplane workers in war time are as touchy as any group of wild Irish shareholders of the old Dunlop Tyre Company in the days when they expected 100 per cent. dividend yearly, and Mr. du Cros could only pay them 80 per cent. or so. The shareholders would come to the company's meeting vowing to have the blood of the whole du Cros family; but they would leave the meeting smiling after hearing Mr. du Cros's speech, and the feeling would be that with such a splendid chairman one didn't need any dividend at all—sometimes they didn't have one, but Mr. du Cros would receive a vote of confidence all the same!

Delivering the Goods.

I rather fancy Mr. Scarff holds his men together by similar magic. He has excellent men, and they stick to him loyally; and they certainly deliver the goods in the splendid aircraft they turn out. This holding together of the workers may seem a small thing to the general reader, but the recent big strike gave an instance of how difficult the task is.

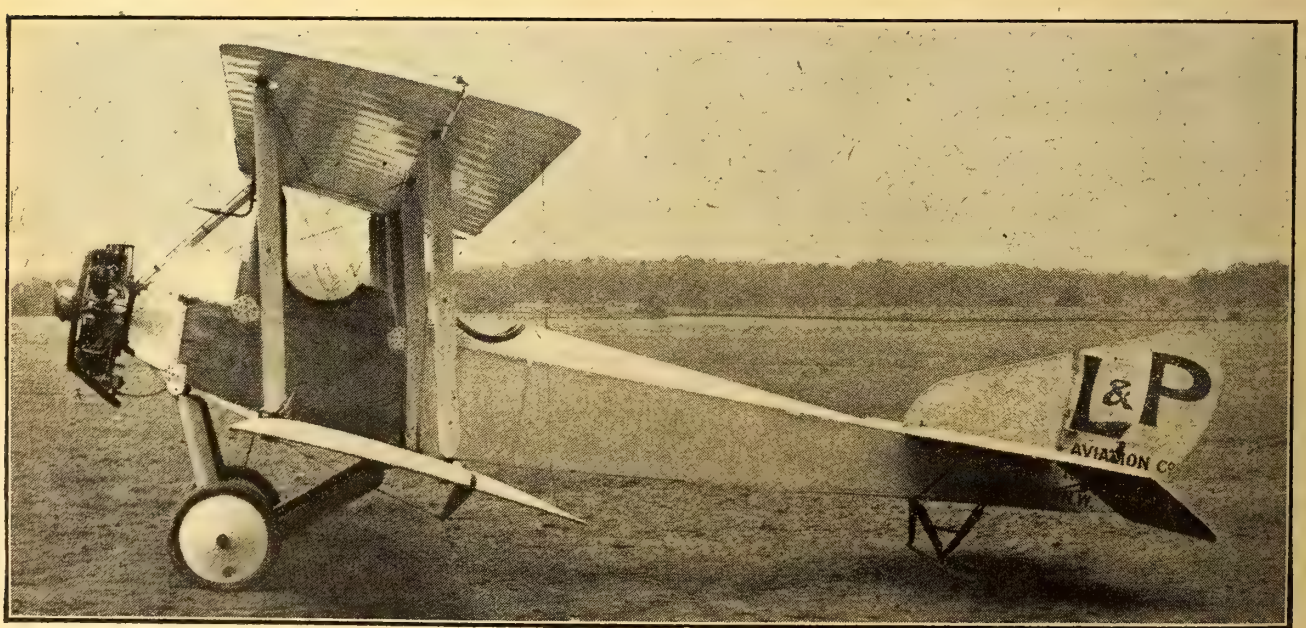
There have been sundry other cases of trouble of which the public did not know, and the loss of time in many works has been most serious. Hence, when we find a firm with a record like that of the Regent Carriage Company the thing is worth chronicling.

Another unique feature about this company is that its works are so ingeniously camouflaged through natural circumstances that location by the enemy would be impossible. I had trouble in finding them myself though my exploration was conducted on foot.

I think it was our worthy editor (or some other crank) who suggested years ago that aircraft factories of the future should be concealed by being dug out in tunnels under the Welsh mountains, and as F. W. Lanchester has recommended that London be moved to the same locality for fear of enemy raids, we have a nice prospect before us. But I prefer the capital where it is, and I prefer the camouflage system of the Regent Carriage Company.

Whilst Mr. Scarff was telling me a funny story about some Government department the telephone rang, and he was informed that another of their works was on fire. "Well, be sure and get it out before there's any damage done," he replied, and then went on with his story.

As a matter of fact, the fire did go out without much fuss. Such is influence in the right places.



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THE WORKING OF THE CALTHROP PARACHUTE

In previous issues of The Aeroplane space has been devoted to advocating the use of parachutes in aeroplanes for purposes of life-saving in the event of fire or loss of control at considerable altitudes. Subsequently, descriptions were given of the dropping of living and dead weights successfully from the "Guardian Angel" parachute, invented by Mr. E. R. Calthrop, which seems to be the best parachute so far evolved for drops made from aeroplanes.

The writer of these notes, who backed his opinion of the reliability of this parachute by doing a jump from an aeroplane on his own account, feels that if he can convey clearly to the minds of his readers the manner of the working of the Calthrop parachute they will consider that, after all, he was not so very fanatical when he took the small amount of courage he possesses in both hands and threw himself out of an aeroplane, absolutely certain in his own mind that he would live to tell the tale.

The two great dangers which the parachute-designer has got to overcome are, the risk of the parachute rigging becoming entangled, and the risk of the parachute itself failing to open because of the suction together of its sides in a common mass, occasioned by an internal vacuum produced by its fall.

Mr. Calthrop has eliminated these dangers by so isolating the rigging units from one another that they cannot come into contact, and he has so arranged the parachute body that not only do its walls keep apart, but from the commencement of the operation of opening they enclose a column of compressed air which forces apart the pleating and folding of the nested parachute body at the instant of its withdrawal from the launching disc.

Fig. 1 shows the parachute folded in its case in sectional plan and elevation. The case itself consists of two dished circular duralumin discs, the upper one being merely a cover and the lower one the launching disc, held rigidly about six inches apart

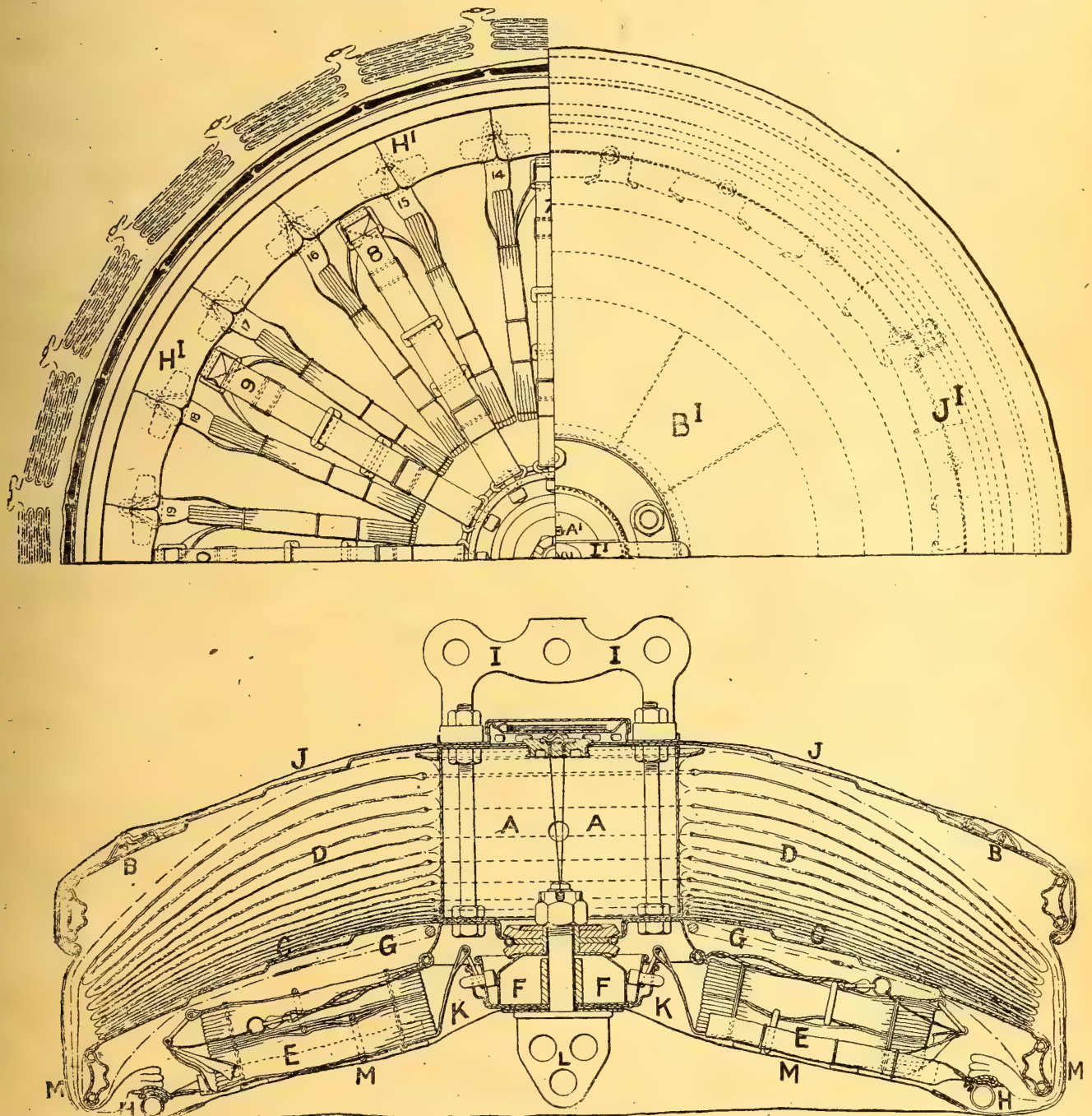


Fig. I.—A, central cylindrical body of the container which connects launching disc and cover disc; B.B¹, cover disc, or wind shield; C, launching disc; D, folded and pleated parachute body; E, folded tape rigging; F, bridle hub above which can be seen the rubber friction clip; G, flange on launching disc over which slips the central ventilator ring; H.H¹, anchorage of periphery of parachute to rigging by toggles; I.I¹, anchorage for aeroplane rope and handle for carrying; J.J¹, waterproof cover above; K, anchorage of rigging to launching hub; L, anchorage of bridle rope; M, lower slip off waterproof cover.

by bolts. Between these discs is folded the parachute body reduced firstly to a cylinder by a series of vertical pleats and then telescoped, concertina fashion, by a series of horizontal folds.

The parachute case is suspended firmly from the aeroplane. When the wearer of the harness jumps overboard, the pull of his weight, transmitted through the shock-absorber, causes the parachute rigging to unfold itself in a sequence the reverse of that in which it is packed. This is followed by the unfolding of the parachute progressively from periphery to centre.

The Packing Arrangement.

An examination of the sectional elevation in Fig. 1 will show how the parachute is packed. The circular ventilator hole in the middle of the parachute is threaded over a boss on the underside of the launching disc, which is the lower metal plate to which the bolts are shown attached. Its edge is held there by a rubber ring.

The launching disc (during the packing of the parachute) is then inverted so that the silken parachute body falls round it like a skirt which is then pleated vertically to form a cylinder. This cylinder is then folded horizontally (concertina fashion) so that it sits on the top of the launching disc, as shown in the diagram, the first fold being at the bottom; the last at the top.

The actual periphery of the parachute is brought down round the periphery of the launching disc and attached to the folded rigging underneath by toggles.

The Rigging.

The sectional plan and the sectional elevation show the arrangement of the rigging, which consists of diagonally woven obliquated tapes, which, unlike cords, are found never to tangle. The lower ends of the main tapes are attached to a ring or hub held by the friction of rubber rings to a clip on the underside of the launching disc.

Each of these main tapes (14, 15, 16, 19, etc.) is folded backwards and forwards into a little bundle, and held so by heavy rubber bands. The duplex tapes (7, 8, 9, etc.), near the periphery of the parachute are folded separately, and are held in place by light rubber bands.

The main tapes are arranged to unfold progressively, developing friction. The duplex tapes unfold instantaneously when tension is put upon them, and without friction.

Both the tapes and the parachute body are held in their proper places by a small number of threads designed to break under a specific strain.

The duralumin discs are covered top and bottom by a pair of waterproof covers which overlap, and are held in place by rubber rings. As the lower cover passes underneath the bridle ring it follows that the fall of this ring when the parachutist jumps detaches the waterproof cover and exposes the tapes.

The sketches in Fig. 2 show progressive stages in a straight drop from a kite balloon. The method of opening is the same with an aeroplane, but the motion of the machine causes both man and parachute to follow a curved path at the start of the fall until the momentum of the load (the man) is absorbed.

No. 1 shows the observer in the balloon basket wearing his harness. The parachute in its cover hangs from the rigging. On the bridle rope is fixed a rubber shock absorber which relieves the parachute of some of the shock of the observer's fall, and relieves the observer of some of the shock of the resistance of the parachute.

No. 2 shows the observer after his jump, the waterproof cover having been pulled off by the anchorage of the cord at a tension of about 70 lbs., and the primary tapes commencing their progressive unwinding.

No. 3 shows the primary tapes fully extended. Their friction rings, which can be seen still threaded on the tapes, absorb an appreciable amount of the shock of the fall during the process of unfolding.

No. 4 shows the transfer of the load to the duplex tapes which open instantaneously and so compensate for any irregularity of the unfolding of the primary cords. Thus the pulls of the various tapes on the periphery of the body arrive synchronously and prevent a lopsided pull-off.

No. 5 shows the commencement of the glissade of the periphery of the parachute body over the moulded edge of the launching disc, commencing to enclose a column of air equal in diameter to that of the launching disc.

No. 6 shows the parachute body, still held in tension by the weight of the pilot, nearly out of the case.

No. 7 shows the parachute body at the moment when its ventilator ring has left the flange of the launching disc, and with the internal air-pressure forcing the parachute open against the tension of the observer's weight.

No. 8 shows the progressive expansion of the parachute body into a bun shaped cushion.

No. 9 shows the parachute fully open and commencing a normal descent.

In practice, the achievement of these nine stages occupies in all, approximately, 1¼ seconds, followed by a cushioning process occupying 1¼ seconds, which reduces the speed of the fall to the

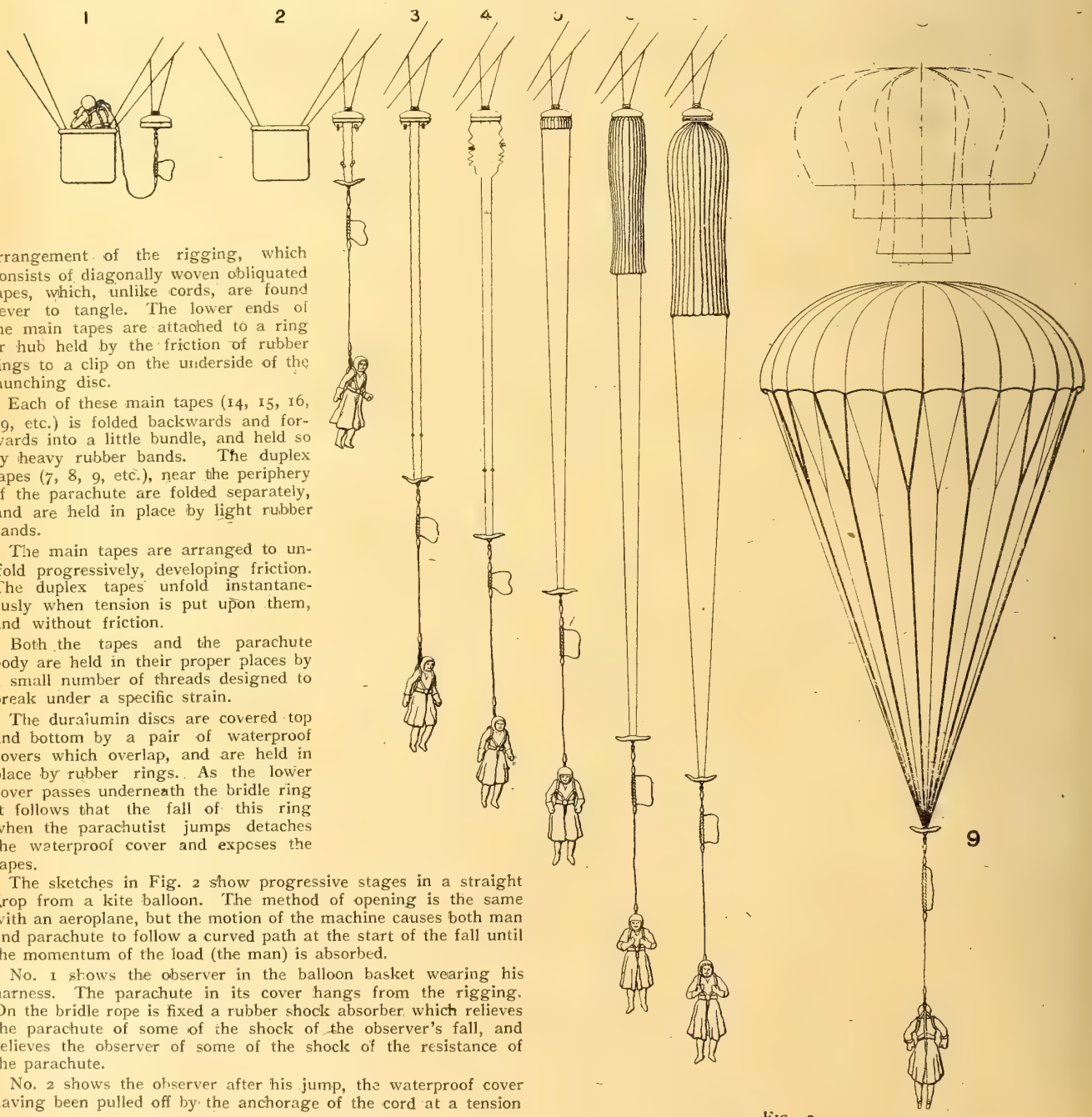


Fig. 2.



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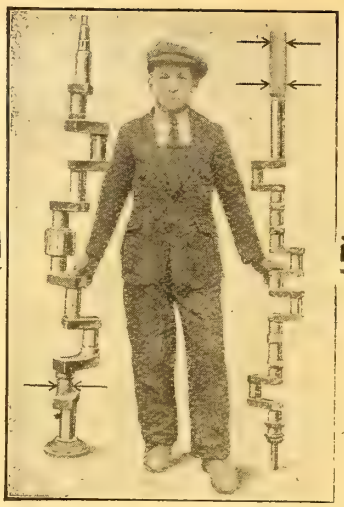
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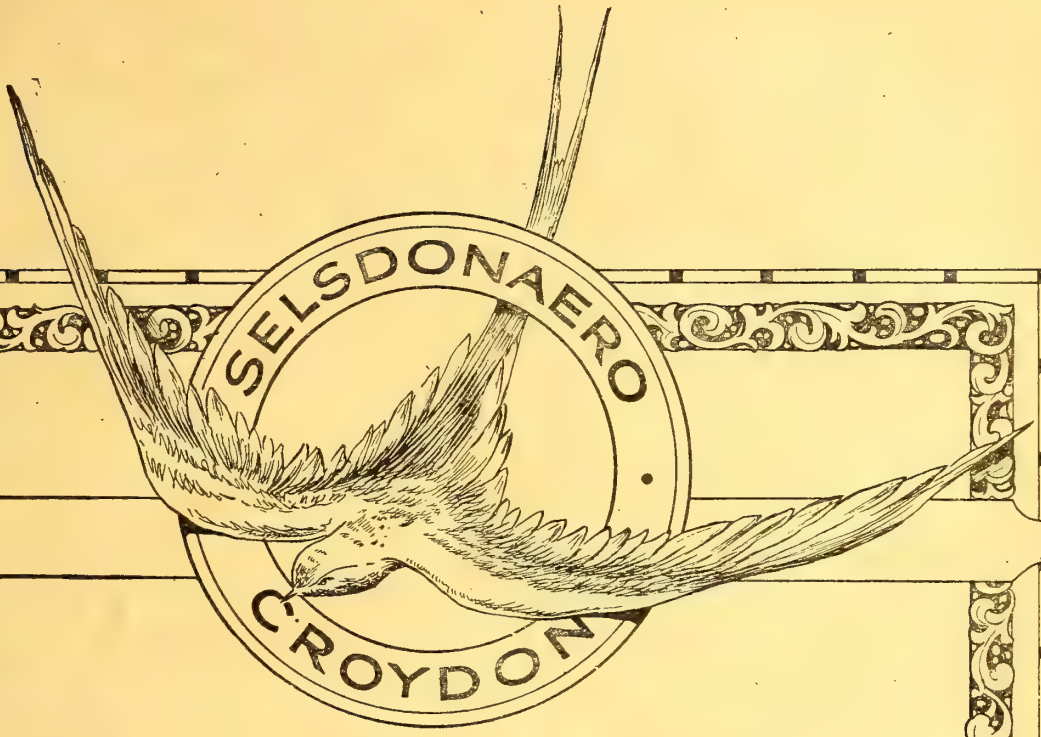
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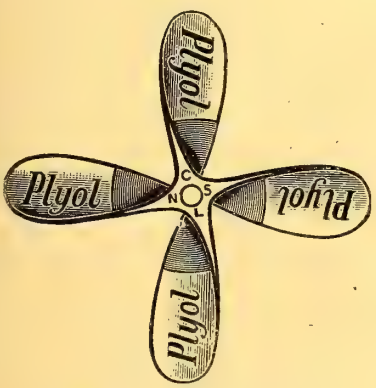
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Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.

Bearings (Etonia Cast Phosphor Bronze)

Yorkshire Engineering Supplies, Ltd., Wortley, Leeds. "Yes, Leeds." Central 5927.

Blowpipes (Oxy-Acetylene)—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic. 4830.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Vic. 3540 (3 lines).

Brass Sheets for Tipping Propellers—

Pritt & Co., 46, Fenchurch Street, London, E.C.3. "Poetry, Fen, London." Avenue 995, 996, and 7996.

Buildings—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey. Wimbledon 1313.

Rubery, Owen, & Co., Darlaston, South Staffs.

The Wilfley Co., Ltd., Salisbury House, London Wall, E.C.2. "Wrathless, 'Phone, London." City 2681-2.

Cable Coverings and Cable Controls—

The Bowden Brake Co., Ltd., Tyseley, Birmingham. "Bowden, Acock's Green." Acock's Green 103 & 104.

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Carburettors—

Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2 Victoria 4670.

Casein—

Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C. 3. "Suricodon, Fen, London." Avenue 34 and 35.

Celluloid (Non-Flam.)—

Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London." Central 1306-7.

Clothing—

Burberry's, Ltd., Haymarket, S.W.1. Regent 2165.

Dunhill's, Ltd., Euston Road, N.W.1. "Dunsend, London." North 3405-6.

Coloured Rags—

Joseph, A., Earl Street, London Road Southwark, S.E.1. "New Mongo Sedist, London." Hop 83, 361, 4272.

Component Parts—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (4 lines).

Central Aircraft Co., High Road, Kilburn, N.W.6 "Aviduction, Phone, London." Hampstead 4403 & 4404.

P.D.V. Aircraft Co., Ltd., Princes Street, Richmond. "Aeros, Richmond" Richmond 1681.

Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros., Bilston." Bilston 10.

Cords, Tapes, and Threads—

MacLennan, J., & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Dopes—

British Aeroplane Varnish Co., Ltd., 166, Piccadilly, W.1. "Tetrafree, Piccy, London." Gerrard 2312.

British Cellulose Co., 8, Waterloo Place, S.W.1. "Cellutate, London." Regent 4046.

The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.

Cellon, Ltd., 22, Cork Street, London, W.1. "Ajawb, Reg, London." Gerrard 440.

Clark Ingham, Robt., and Co., Ltd., Walter House, Bedford Street, Strand, W.C.2. "Pearline, Westrand, London." Regent 3923.

Engines and Parts—

Allen, W. H., & Co., Ltd., Bedford. "Pump, Bedford." Bedford No. 1.

Arrol-Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.

The Beatty School of Flying, Ltd., The Broadway, Cricklewood, N.W.2. Hampstead 3000.

Engines and Parts—

Beardmore Aero Eng., Ltd., 112, Great Portland Street, W.1. "Beardmore, London." Gerrard 238.

Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W.1. "Aeroflight, Vic, London." Vic. 7026.

Gordon Watney & Co., Ltd., Weybridge. "Mercédès, Weybridge" Weybridge 550 (7 lines).

Green Engine Co., Ltd., Twickenham. Richmond 1203.

Gwynnes, Ltd., Hammersmith, W. "Gwynne, Hammersmith." Hammersmith 1910.

Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London." Gerrard 8926.

Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1654-5-6.

Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton" Wolverhampton 985.

The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1. "Elevenfold, London." Walthamstow 408 (2 lines).

Electrical Accessories—

Belling & Co., Montagu Road, Upper Edmonton, N.18. "Belling, Edmonton" Tottenham 1984.

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.

Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Euston road, London." Museum 70.

Premier Electric Heaters, Ltd., 258, 259, and 360, Bradford Street, Birmingham. "Fahrenheit, Birmingham." Midland 081

The Rotax Motor Accessories Co., Ltd, Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Electric Cables—

E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 24x.

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2207; London Wall 1564.

Electric Lighting and Power—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.

Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Euston road." Museum 70 (4 lines)

Electro Platers and Metal Polishers' Engineers—

W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines)

Enamel—

Silica Enamel Co., New Cross, London, S.E.

Flare Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flexible Shafts—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61

Fluxes—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools—

Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton." Bournemouth 1160.

Cambridge School of Flying and Aerodrome Co., 308, St Andrews Street, Cambridge. "Carbon, Cambridge." Cambridge 5 and 1086.

Furniture (Office)—

Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2. London Wall 573 and 6179.

Galvanising—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

Gauges—

J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17.

Gears—

Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham. "Mosgear, Birmingham" East 407.

· Buyers' · Guide.



Glue—
Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Bececolin, Cannon, London." City 1206.
Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Wapp, London." Avenue 3178.
Meudline Co., 8, Arthur Street, E.C. Bank 5873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3.

Goggles—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Hack Saw Blades and Machines—
Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880.

Heating and Ventilating—
Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 372 (2 lines).
Sturtevant Engineering Co, Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).

Hollow Spars—
McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718.

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1308.

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co, Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17. "Aneroid, Phone, London." Walthamstow 180.

Leather Cloth—
New Pegamoid, Ltd, 134, Queen Victoria Street, London. "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1. "Vicksmag, Phone, London" Museum 430.
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry." Coventry 1008-1009.

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham. "Clifford, Birmingham." Central 42-43. Avenue 1432.

Metals in General—
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.
Pritt & Co., 46, Fenchurch Street, London, E.C.3 "Poetry, Fen, London." Avenue 995, 996, and 7996.
Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London." City 6342.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4959.
Aircraft Supplies Co, Ltd., Ascot House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton 1041.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3. Avenue 1432.
Lombard Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).

Metal Parts and Fittings—
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing. Eusroad, London." Museum 70.
Mountford, Fredk., Lt., Lifford, Birmingham. "Fremo, Birmingham." King's Norton 261.
Rubery Owen & Co., Darlaston, South Staffs.
Sankey, Joseph, & Sons, Ltd, Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston." Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford." Keynsham 21.

Metal Spinnings—
Arnold & Sons, Lawrence Road, Tottenham, N.15.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.
Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith "Frodobrake, Birmingham." Central 793.
MacLennan, J., & Co., 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines)

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames.
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2 "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London." London Wall 3266-3267.

Pattern Making—
Fredk. Ward, 6, 7 and 8, Allsop Street, Upper Baker Street, W. Padd. 4743.

Piston Rings—
British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.

Plating, Nickel Silver and Electro Tinning—
Arnold & Sons, Lawrence Road, Tottenham, N.15.

Power Presses and Dies—
Bliss, E. W., & Co., 2a, Pocock Street, Blackfriars Road, London, S.E.1. "Blissdon, London." Hop. 4340.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames. "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104.
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." 24214 Leeds.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil. Yeovil 129

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Inventors, Redditch." Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).
Gosport Aircraft Co., Gosport. "Flight, Gosport" Telephone No. 217.
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Southampton 1337.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds. Leeds 21953.

Searchlights & Landing Lights—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd, Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Arnold & Sons, Lawrence Road, Tottenham, N.15.
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London" Vic 4830.
Arnold & Sons, Lawrence Road, Tottenham, N.15.
British Metal (Kingston), Ltd., Kingston-on-Thames. [Staffs
Rubery Owen & Co, Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
Arthur Hill & Co, Silchester Road, North Kensington, W. Park 1443.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

BUYERS' GUIDE cont. on next page.



The · Aeroplane ·

Acceptance and Experimental Flights—
The Prodger Isaac Aviation Co. "Aeromnia, Piccy, London" Gerrard 278 (2 lines)

Acetylene Welding Plant—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1 "Flamma, Vic, London" Vic 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London" 3540 Victoria (3 lines).

Aeroplane Manufacturers—
Aircraft Manufacturing Co., Ltd., Hendon. "Airmanship, Hyde, London" Kingsbury 220
Armstrong, Sir W., Whitworth & Co., Ltd., Newcastle - on - Tyne "Armstrong Aviation, Newcastle-on-Tyne." Gosforth 500
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich" Norwich 851.
British & Colonial Aeroplane Co., Ltd. (The Bristol Co.), Filton, Bristol. "Aviation, Bristol" Bristol 3006
British Caudron Co., Ltd., Broadway, Cricklewood, N.W.2 "Caudroplan, Crickle, London" Hampstead 2451.
Central Aircraft Co., High Road, Kilburn, N.W.6. "Aviduction, Phone, London." Hampstead 4403 and 4424.
Davidson Aviation Co., Ltd., Hammersmith, W.6 Hammersmith 1992 (3 lines).
Dawson, John, & Co., Ltd., Newcastle-on-Tyne. "Dependable, Newcastle-on-Tyne" Central 2604 (2 lines).
Eastbourne Aviation Co., Ltd., Eastbourne. "Aircraft, Eastbourne" Eastbourne 1176
Grahame-White Aviation Co., Ltd., London Aerodrome, Hendon. "Volplane, Hyde, London." Kingsbury 120
Handley Page, Ltd., 110, Cricklewood Lane, N.W.2 "Hydrophid, Crickle, London" Hampstead 7420
Hooper & Co., Ltd., 54, St. James St., Piccadilly, London, S.W. "Sociable, St. James, London" Regent 912
Mann, Egerton & Co., Ltd., Norwich "Motors, Norwich" Norwich 482 (4 lines).
Martinsyde, Ltd., Brooklands, Byfleet. "Martinsyde, Weybridge" Woking 137; Byfleet 171
National Aircraft Manufacturing Co., Ltd., 25, Drummond Crescent, Seymour Street, Euston Museum 3371
"Nieuport" & General Aircraft Co., Cricklewood, London, N.W.2 "Nieuscout, Crickle, London" Willesden 2455.
The Regent Carriage Co., Ltd., 126/132, New King's Road, Fulham, S.W.6. "Carbodis, London" Putney 2210-2241.
Roe, A. V., & Co., Ltd., Manchester. "Triplane, Manchester" City 8550-8551, Manchester
Saunders, S. E., Ltd., East Cowes, I.O.W. "Consuta, East Cowes" Cowes 101
Short Bros., Rochester, Eastchurch and Whitehall House, S.W. "Tested, Phone, London" Regent 578
Sopwith Aviation Co., Ltd., Kingston-on-Thames. "Sopwith, Kingston" Kingston 1088 (8 lines).
Standard Aircraft Manufacturing Co., 28, Bow Common Lane, E. East 2821
Tarrant, W. G., Byfleet, Surrey "Tarrant, Byfleet" Byfleet 1, 2 & 3
Thames Aviation Works, 111, Curtain Rd., E.C.2. London Wall 6766
Vickers, Ltd., Imperial Court, Basil Street, Knightsbridge, S.W.3 "Vickerfixta, Knights, London." Kensington 6810
Waring & Gillow, Ltd., Hammersmith. "Warisen, Ox, London" Museum 5000
Westland Aircraft, Yeovil "Aircraft, Yeovil" Yeovil 120
White, J. Samuel, & Co., Ltd., East Cowes. "White, East Cowes" Cowes 1
Whitehead Aircraft (1917), Ltd., Richmond, Surrey "Whitecraft, Richmond, Surrey" Richmond 1760-1
Wycombe Aircraft Constructors, Ltd., High Wycombe, Bucks. "Aircraft, High Wycombe" High Wycombe 84

Airships—
Airships, Ltd., High Street, Merton Wimbledon 1311
Short Bros., Rochester, Eastchurch, and Whitehall House, S.W. "Tested, 'Phone, London" Regent 578

Aluminium Castings (Sand and Die)
Coan, R. W., 19, Colwell Road, London, E.C.1 "Krankase, Isling, London" City 3836

Bent Timber Parts—
Hopton & Sons, George Street, Euston Square, London, N.W.1 "Hoptons, Eusquare, London" Museum 496.
Also at Market Harborough, Leicestershire "Hoptons, Market Harborough" Market Harborough 13.

Bearings (Etonia Cast Phosphor Bronze)
Yorkshire Engineering Supplies, Ltd., Wortley, Leeds. "Yes, Leeds." Central 3927

Blowpipes (Oxy-Acetylene)—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1 "Flamma, Vic, London" Vic 4830
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London" Vic 3540 (3 lines)

Brass Sheets for Tipping Propellers—
Pritt & Co., 46, Fenchurch Street, London, E.C.3 "Poetry, Fen, London." Avenue 695, 996, and 7996.

Buildings—
Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich" Norwich 851
The Camden Construction Co., Ltd., 259, High Street, Camden Town, N.W.1
Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey Wimbledon 1513
Ruberv, Owen, & Co., Darlaston, South Staffs
The Wilfley Co., Ltd., Salisbury House, London Wall, E.C.2. "Wrathless, 'Phone, London." City 2681-2.

Cable Coverings and Cable Controls—
The Bowden Brake Co., Ltd., Tyseley, Birmingham "Bowden, Acock's Green" Acock's Green 103 & 104
Herbert Terry & Sons, Ltd., Redditch "Springs, Redditch" Redditch 61

Carburettors—
Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2 Victoria 4670

Casein—
Nicuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C.3. "Suricodon, Fen, London" Avenue 34 and 35

Celluloid (Non-Flam.)—
Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London" Central 1506-7.

Clothing—
Burberry's, Ltd., Haymarket, S.W.1 Regent 2165
Dunhill's, Ltd., Euston Road, N.W.1. "Dunsend, London" North 3405-6

Coloured Rags—
Joseph, A., Earl Street, London Road Southwark, S.E.1 "New Mongo Sedist, London" Hop 83, 361, 4272.

Component Parts—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (4 lines)
Central Aircraft Co., High Road, Kilburn, N.W.6 "Aviduction, Phone, London." Hampstead 4403 & 4404.
P.D.V. Aircraft Co., Ltd., Princes Street, Richmond "Acros, Richmond" Richmond 765
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros., Bilston" Bilston 10

Cords, Tapes, and Threads—
MacLennan, J., & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Dopes—
British Aeroplane Varnish Co., Ltd., 166, Piccadilly, W.1 "Tetrafrec, Piccy, London" Gerrard 2312.
British Cellulose Co., 8, Waterloo Place, S.W.1 "Cellutate, London" Regent 4046.
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1 "Ridlespren, Piccy, London." Gerrard 280
Cellon, Ltd., 22, Cork Street, London, W.1. "Ajayvb, Reg, London" Gerrard 410.
Clark Ingham, Robt., and Co., Ltd., Walter House, Bedford Street, Strand, W.C.2 "Parline, Westrand, London" Regent 3923.

Engines and Parts—
Allen, W. H., & Co., Ltd., Bedford. "Pump, Bedford" Bedford No. 1
Arrol Johnston, Ltd., Dumfries "Mocar, Dumfries" Dumfries 251 252
The Beatie School of Flying, Ltd., The Broadway, Cricklewood, N.W.2 Hampstead 3000.

Engines and Parts—
Beardmore Aero Eng., Ltd., 112, Great Portland Street, W.1. "Beardmore, London." Gerrard 218
Dudbridge Iron Works, Ltd. (Salmson), 89, Victoria Street, London, S.W.1 "Aeroflight, Vic, London" Vic 7026.
Gordon Watney & Co., Ltd., Weybridge. "Mercedes, Weybridge" Weybridge 550 (7 lines).
Green Engine Co., Ltd., Twickenham Richmond 1203
Gwynnes, Ltd., Hammersmith, W "Gwynne, Hammersmith." Hammersmith 1040
Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W "Nitrifier, London" Gerrard 8926
Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London" Gerrard 2634-2635.
Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton" Wolverhampton 985
The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1 "Elevenfold, London" Walthamstow 408 (2 lines).

Electrical Accessories—
Belling & Co., Montagu Road, Upper Edmonton, N.18 "Belling, Edmonton" Tottenham 1984.
Johnson & Phillips, Ltd., Charlton, London, S.E.7 "Juno, London" Central 2207; London Wall 1562
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1 "Installing, Euston Road, London" Museum 70
Premier Electric Heaters, Ltd., 258, 259, and 260, Bradford Street, Birmingham "Fahrenheit, Birmingham" Midland 81
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10 "Rodynalite, Phone, London" Willesden 2280

Electric Cables—
E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 248
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2207; London Wall 1562

Electric Lighting and Power—
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1562
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W. "Installing, Euston Road." Museum 70 (4 lines)

Electro Platers and Metal Polishers' Engineers—
W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines)

Enamel—
Silica Enamel Co., New Cross, London, S.E.

Flare Lights—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London" Victoria 3540 (3 lines)

Flexible Shafts—
Herbert Terry & Sons, Ltd., Redditch "Springs, Redditch." Redditch 61

Fluxes—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines)

Flying Schools—
Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth "Etches, Winton" Bournemouth 1160
Cambridge School of Flying and Aerodrome Co., 308, St. Andrews Street, Cambridge "Carbon, Cambridge" Cambridge 5 and 1086

Furniture (Office)—
Cookes (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2 London Wall 573 and 6179

Galvanising—
Boulton & Paul, Ltd., Rose Lane, Norwich "Aviation, Norwich" Norwich 851

Gauges—
J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17

Gears—
Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham "Mossgear, Birmingham" East 407



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Glue—
Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Beecolin, Cannon, London." City 1206.
Improved Liquid Glues Co., Ltd., 61 Hermitage Street, E. (Croid.) "Excroiden, Wapp, London" Avenue 3178.
Medhine Co., 8, Arthur Street, E.C. Bank 5873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3

Goggles—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340

Hack Saw Blades and Machines—
Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London" London Wall 1880.

Heating and Ventilating—
Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1 "Kinnell, London" Hop 372 (2 lines)
Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4 "Sturtevant, London" Central 7121 (6 lines)

Hollow Spars—
Mcorner Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1308

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17 "Anteroid, Phone, London." Walthamstow 180

Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London "Pegamoid, Cent, London" City 9703 (2 lines)

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1. "Vicksmag, Phone, London" Museum 430.
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry "Astroidal, Coventry" Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry "Corlton, Coventry" Coventry 1008-1009.

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham. "Clifford, Birmingham." Central 42-43. Avenue 1432.

Metals in General—
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.
Pritt & Co., 46, Fenchurch Street, London, E.C.3 "Poetry, Fen, London." Avenue 695, 996, and 7996
Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London" City 6342.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines)
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4058
Aircraft Supplies Co., Ltd., Ascot House, 128, Long Acre, W.C.2. "Upcast, Rand, London" Gerrard 256 (2 lines)
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction Willesden 2207
Bayliss, Jones & Bayliss, Ltd., Wolverhampton (Bolts and Nuts) "Bayliss, Wolverhampton" Wolverhampton 1013
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds "Propellors, Leeds" Roundhay 345 (3 lines)
British Metal (Kingston), Ltd., Kingston-on-Thames
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3 Avenue 1432
Lombard Rim and Tube Co., Lombard Street, Birmingham "Lombardic, Birmingham" Midland 211 (2 lines)

Metal Parts and Fittings—
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing. Eusroad, London" Museum 70.
Mountford, Fredk., Ltd., Lifford, Birmingham. "Fremo, Birmingham" King's Norton 261
Ruberv Owen & Co., Darlaston, South Staffs
Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 60
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London" Holborn 410
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selsaero, Phone, London" Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2280.
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston" Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford" Keynsham 21.

Metal Spinnings—
Arnold & Sons, Lawrence Road, Tottenham, N.15.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Ruberv Owen & Co., Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast" Belfast 4053-4054-4055
Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London" Willesden 2490 (3 lines)
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London" London Wall 0860
Herbert Frood Co., Ltd., Chapel-en-le-Frith "Frodobrake, Birmingham" Central 703
MacLennan, J., & Co., 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries "Mocar, Dumfries" Dumfries 251-252
Mann, Egerton & Co., Ltd., 377/387, Euston Road, London, N.W.1. "Manegear, Eusroad, London" Museum 70.
Standard Motor Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines)

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames.
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2 "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London" London Wall 5266-5267.

Pattern Making—
Fredk. Ward, 6, 7 and 8, Allsop Street, Upper Baker Street, W. Padd. 4743.

Piston Rings—
British Chuck & Piston Ring Co., Coventry "Rings, Coventry" Coventry 723
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield "Ocean, Sheffield" Sheffield 2149

Plating, Nickel Silver and Electro Tinning—
Arnold & Sons, Lawrence Road, Tottenham, N.15.

Power Presses and Dies—
Bliss, E. W., & Co., 23, Pocock Street, Blackfriars Road, London, S.E.1 "Blissilon, London" Hop. 4340.

Presswork—
Ruberv Owen & Co., Darlaston, South Staffs
Terry, Herbert, & Sons, Ltd., Redditch. "Springs, Redditch" Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich" Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston" Kingston 672
Integral Propeller Co., Ltd. "Avipropa, Hyde, London" Hendon 9 Kingsbury 104
Lang Propeller, Ltd., Weybridge "Aerosticks, Weybridge" Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines)
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds" 21214 Leeds
Stanley Aviation Co., 67, Kingsland Road, E.2 Bis 3447.
Westland Aircraft, Yeovil "Aircraft, Yeovil. Yeovil 120

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1

Pyrometers—
The Foster Instrument Co., Letchworth, Herts Foster Instruments, Letchworth Letchworth 20

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4626

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England "Cradock, Wakefield" Wakefield 466

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Invertors, Redditch" Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds "Propellors, Leeds" Roundhay 345 (3 lines)
Gosport Aircraft Co., Gosport "Flight, Gosport" Telephone No 217.
Mann, Egerton & Co., Ltd., Norwich "Motors, Norwich" Norwich 482 (4 lines)
Short Bros., Rochester "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Co., Ltd., Southampton "Supermarine, Southampton" Southampton 1337.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds Leeds 21053

Searchlights & Landing Lights—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10 "Rodynalite, Phone, London." Willesden 2280.

Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex "Goishel, Hounslow" Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Arnold & Sons, Lawrence Road, Tottenham, N.15
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds" Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham "Brisk Bham" Central 550
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Ruberv Owen & Co., Darlaston, South Staffs

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London" Vic 4830
Arnold & Sons, Lawrence Road, Tottenham, N.15
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The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selsaero, Phone, London" Regent 1181.
Arthur Hill & Co., Silchester Road, North Kensington, W. Park 1113.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1 "Edibrac, 'Phone, London" Victoria 3540 (3 lines)

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"The Aeroplane" Buyers' Guide.—*continued.*

Small Tools—
The Small Tool Supply Co., Ltd., Avenue Chambers, Southampton Row, W.C. "Prosait, West-Cent., London." Museum 2655.

Sparking Plugs—
Lodge Sparking Plug Co., Ltd., Rugby. "Igniter, Rugby." Rugby 235.
Ripault, Leo. & Co., Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

Springs—
Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Stampings—
Arnold & Sons, Lawrence Road, Tottenham, N.15.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3. Avenue 1432.

Steel—
Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 to 3237.
Guthrie, J. B., & Son, 30, St Mary Axe, E.C.3. Avenue 1432.
Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Steel Stamps and Markings—
John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).

Tanks & Cowls for Aeroplanes
Zephyr Ventilating Co., Ltd., Tyopiatt Road, Bristol. Telegrams — Zephyr, Bristol

Taper Pins—
Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—
MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Timber—
Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526.
Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.
J. Owen & Sons, Ltd., 109a, Borough High Street, S.E.1. "Bucheron, London." Hop 3811 (2 lines).

Time Recorders—
Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles— Staffs.
Rubery Owen & Co., Darlaston, South
Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Eusroad." Museum 70 (4 lines).

Tyres and Wheels—
The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent." Gerrard 1214 (5 lines).

Undercarriages—
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.
Clark Ingham, Robt., & Co., Ltd., Walter House, Bedford Street, Strand, W.C.2. "Pearline, Westrand, London." Regent 3923.
Harland, W., & Son, Merton, London, S.W.19. "Harland, Wimbledon 45." Wimbledon 45 and 1395
Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—
Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95.

Washers—, Avenue. 1432.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Watchmakers and Jewellers—
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Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines).

Welding and Cutting Plant—
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Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Welding Repairs—
Arnold & Sons, Lawrence Road, Tottenham.
Barimar, Ltd., 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.
The New Welding Co., 26, Rosebery Avenue, London, E.C.1. "Windoneeda, Holb, London." Holborn 5252.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Wind Shields—
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The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesdon Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
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Wire Gauze—
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Wires and Cables—
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Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466 (3 lines).

Wirework—
Terry, Herbert, & Sons Ltd., Redditch. "Springs, Redditch." Redditch 61.

Woodworking Machinery—
Robinson, Thomas, & Son, Ltd., Rochdale. "Robinson, Rochdale." Rochdale 467.
Sagar, J., & Co., Ltd., Halifax. "Sawtooth, Halifax." Halifax 136.
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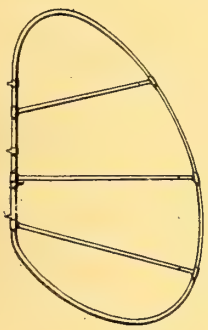
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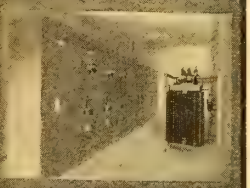
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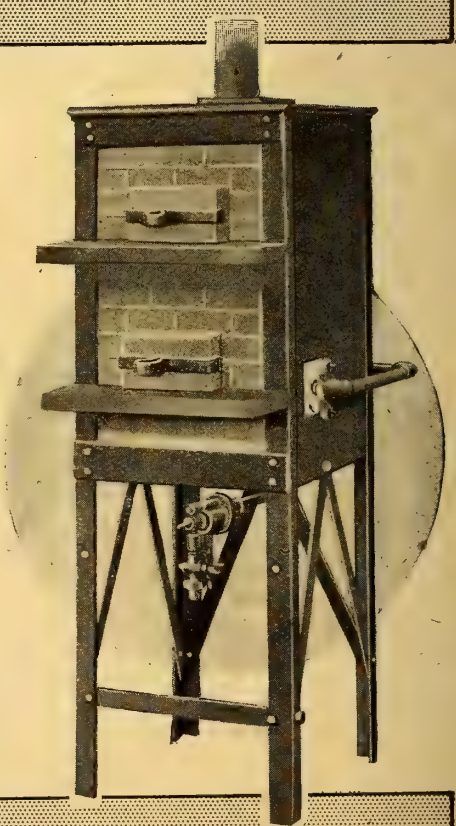
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Illustration shows the No. 100 size (each chamber 9¼" × 5½" × 3⅜" inside). Price **£30** complete. Made in 4 other sizes—see Lists F18 A, B and C (gratis).

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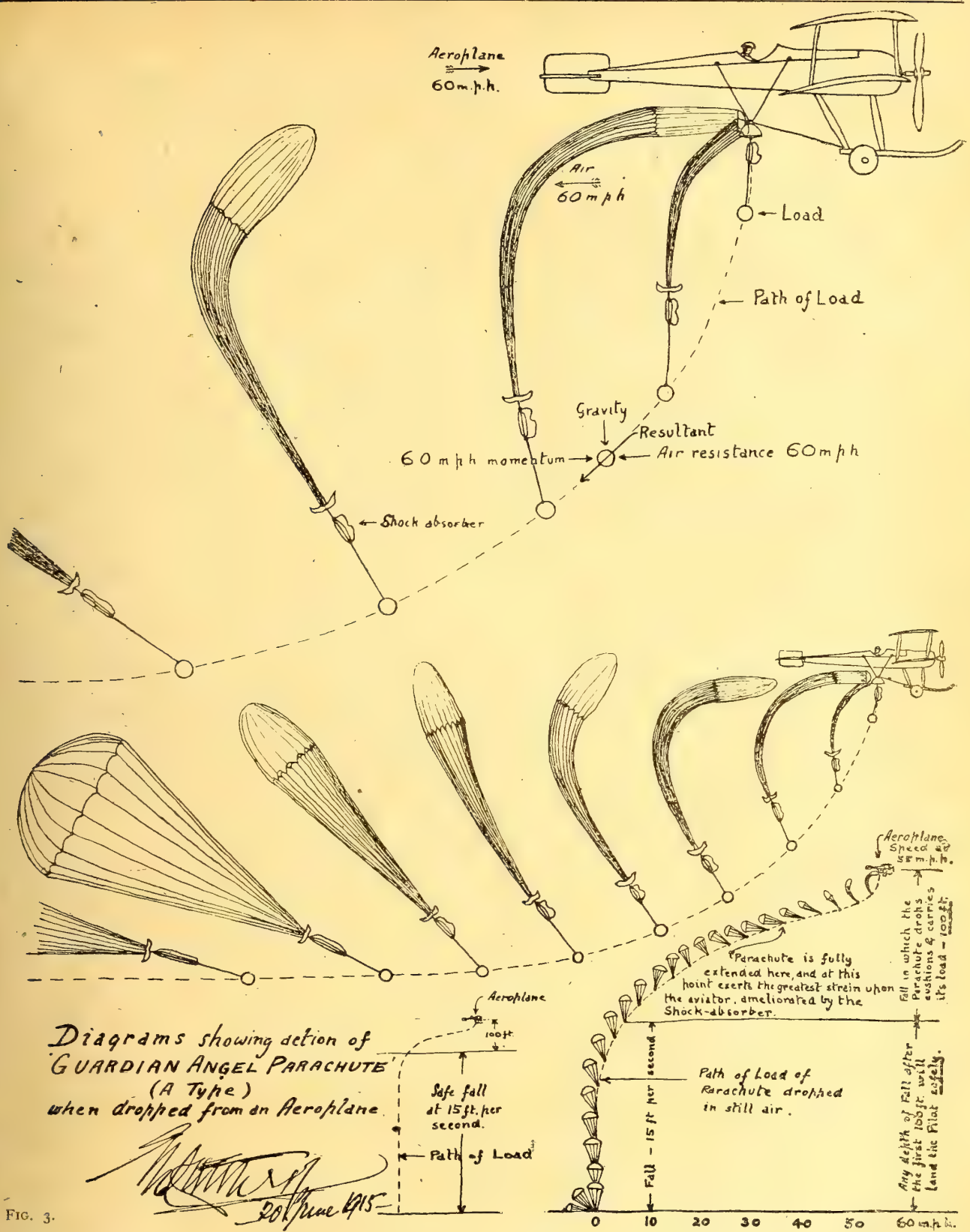


FIG. 3.

safe landing speed of 15 feet per second. In 2½ seconds a fall of 100 feet has taken place.

Fig. 3 shows the progress of a drop from an aeroplane. The streaming back of the parachute has no other effect than to cause a swing and a counter-swing, after which the parachute and its load assume a normal position.

It is noteworthy that these sketches were made in 1915, before an aeroplane drop had ever been made, when Mr. Calthrop was applying for permission to make experiments with a Service aeroplane. Subsequent bioscope records proved his calculations to be correct in every respect.

A lever on the front of the harness enables the observer to release himself immediately he lands.

The arrangement of the parachute in its case is absolutely waterproof, and while it is in the sealed condition in which it leaves the works it will be as certain in its action as any engineering device which can be conceived. It can be carried for 6 months without deterioration, after which time it should be pulled out and reassembled.—W. L. W.

FLAX AND HEMP CONTROL.

An inquiry is being made into the quantity of linen or tow yarns made from flax, Italian hemp, or Russian hemp which are held in the United Kingdom on account of Allied or neutral firms. All persons holding such yarns on Allied or neutral account are required under the Defence of the Realm Regulations to furnish for the information of the Flax Control Board the particulars set out on the schedule which has been issued for the inquiry. If any person having such yarns has not received a copy of the schedule for completion, application for a copy must be made immediately to the War Office, Raw Materials Department, R.M.2.D., Tothill Street, S.W.1.

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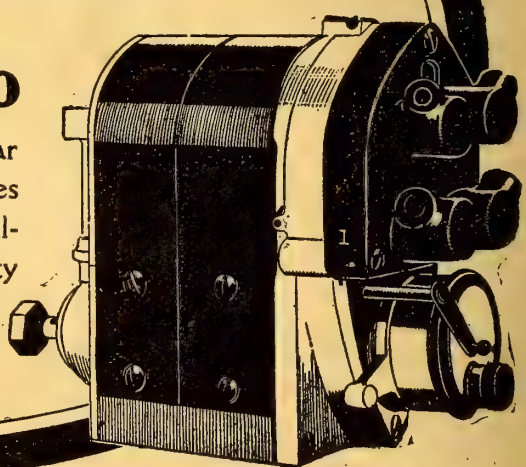
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THE PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by THE AEROPLANE from the current Official Patents Records.

PATENT APPLICATIONS.

Altenberg, G. P. Heat-insulated aeroplane bottles. No. 11592. July 15th.
Andrews, H. Girders, spars, etc. No. 11557. July 15th.
Appleton, H. Aeroplanes. No. 11899. July 20th.
Austin Motor Co. Frame structures for flying-machine parts. No. 11609. July 16th.
Barrett, J. C. Combined Clinometer and fore and aft level. No. 11580. July 15th.
Bindley, W. T. Robinson. Dopes, or method of applying same. No. 11759. July 17th.
Blackburn Aeroplane and Motor Co. Landing flying boats. No. 11569. July 15th.
Bolton, F. Exhaust silencers. No. 11830. July 19th.
Cairns, A. Means for propelling aerial machines. No. 11822. July 19th.
Cardoso, A. Propulsion of air, land, water, and submersible vehicles. No. 11747. July 17th.
Cooke, J. Clinometers for aeroplanes. No. 11641. July 16th.
Gregory, G. R. Balloons for dropping bombs. No. 11563. July 15th.
Haldane, D. D. Spars, etc., for aircraft. No. 11626. July 16th.
Handley, W. H. Safety devices for aeroplanes. No. 11764. July 18th.
Hargreaves, W. A. Spars or girders. No. 11640. July 16th.
Hopkins, L. E. Means for attaching rigging, etc., to balloons or airships. No. 11789. July 18th.
Killen, E. B. Means for destroying aircraft. No. 11854. July 19th.
Macfarlane, H. Aeroplanes, etc. No. 11811. July 18th.
Mayrow, J. J. Wings, aerofoils, etc., for aeronautical machines. No. 11666. July 16th.
Saunders, S. E. Laminated propellers for aircraft. No. 11860. July 19th.
Smijth, D. M. Bowyer-. Propelling and sustaining means for aircraft, etc. No. 11813. July 18th.
Smith, E. E. Parachutes. No. 11639. July 16th.
Smith, W. T. Aerial machines. No. 11611. July 16th.
Soc. des Atlrs. L. Breguet. Aeroplanes. No. 11646. July 16th.
Soc. des Atlrs. L. Breguet. Means for propelling aircraft. No. 11648. July 16th.
Thomson, J. Aircraft automatic speed adjuster. No. 11700. July 17th.
Vowell, F. M. Artificial horizon and clinometer for sextants, levels, and aircraft instruments. No. 11554. July 15th.
Willows, E. T. Means for mechanically controlling or operating captive balloons, etc. No. 11790. July 18th.

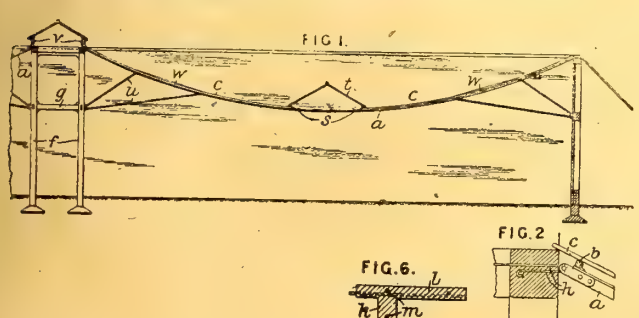
COMPLETE SPECIFICATIONS ACCEPTED, PRINTS OF WHICH CAN BE OBTAINED ON AND AFTER AUGUST 8TH, 1918.

117,309. July 14th, 1917. Thompson, N. A. Launching and landing of aircraft.
109,437. August 16th, 1916. Soc. Lorraine des Acns. Etblmts. de Dietrich et Cie de Luneville. Speed reducing gear for aviation engines.
117,411. Feb. 20th, 1918. Shaw, W. R. D. Tail planes of aircraft.

ABRIDGMENTS OF RECENTLY PUBLISHED SPECIFICATIONS.

115,974. Roofs for hangars, factories, etc. WELLS, E. P., 94, Larkhall Rise, Clapham, London.

The roof covering *c* for a hangar, factory, or other structure is laid directly on suspension members *a*, which may consist of iron



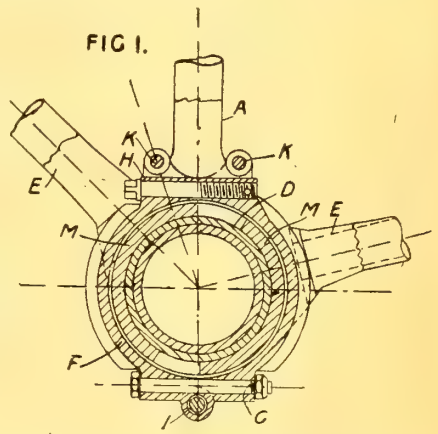
bars of T or other section, or wire rope, wood, or reinforced concrete. The suspension members may be continued over supports between adjacent spans, but are preferably separately anchored, as shown for example in Fig. 2, where a T-bar *a* is shown secured to a stirrup *h*. Purlins *b* may be clipped to the metal or wooden members *a* and the covering *c*, such as corrugated iron, matchboarding, etc., secured thereto. For a concrete roof, the main rods *m*, Fig. 6, constituting the suspension members proper, are laid in position, wire netting or mesh wire is next applied, and finally the concrete to form the supports *k* and roof covering *l*. Gutters *s* are provided at the centre under a cover *t*, which may be glazed, and there may also be added ties *u*, ventilators *p*, and side glazing *w*. A floor *g* and windows may be inserted in the frame supports *f*.

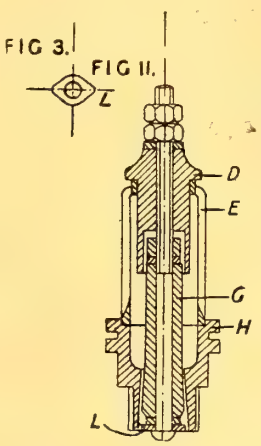
115,968. Aeronautics. PHILLIPS, H., Grove Cottage, West Barnham, Sussex.

PLANES, CONSTRUCTION OF.—Aerofoils for aeroplanes are constructed of thin and smooth material with the dipping front portion extended forwards with reversed curvature, so that the front edge is nearly horizontal or curved slightly upwards. Sheet aluminium alloy, sheet steel, or other metal, three-ply wood, or papier mâché may be used.

116,086. Connecting-rods. BARBAROU, M. J. B., 24, Rue St. James, Neuilly-sur-Seine, Seine, France. April 30th, 1918, No. 7242. Convention date, May 9th, 1917. Not yet accepted. Abridged as open to inspection under Sec. 91 of the Act.

In a V-type internal combustion engine, the big end of the main connecting-rod A is formed in halves secured together by bolts, and is mounted directly on the crank-pin, and the auxiliary connecting-rods E are formed with forked feet M, which bear on the main connecting-rod end through the intermediary of loose split liners D. The feet M are retained in position by a split ring F at each side of the main connecting-rod, the halves of each ring F being secured together by a bolt G and a screw bolt H. The two rings F are connected by bolts K and a bolt I, the latter passing through a projection on the end of the connecting-rod A.



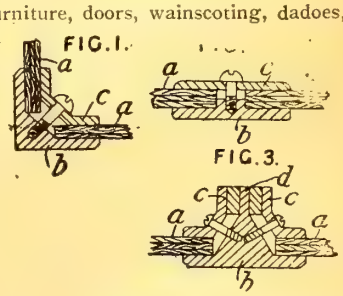


116,069. Sparking-plugs. CEFFALI, A., 1, Via Vigevano, Milan, Italy No. 16856.

The inner portion G of the mica insulation is shaped conically, so that there is a tendency for it to be tightened by the engine compression within a correspondingly shaped opening in the plug casing. Perforations and slots for cooling are formed in the parts H, E. The outer portion D of the insulation consists of fibre. The sparking-terminal L is shaped as shown in Fig. 3.

116,083. Panels. BESSONNEAU, J. P. B., 29, Rue du Louvre, Paris. April 24th, 1918, No. 6929. Convention date, May 5th, 1917. Not yet accepted. Abridged as open to inspection under Sec. 91 of the Act.

Wooden panels for use in furniture, doors, wainscoting, dadoes, ceilings, trunks, boxes, and cases, and aircraft are secured in metallic framing members. The panels *a* may be built up of slabs of wood of different kinds. Examples of construction are shown in Figs. 1, 2, and 3, in which panels *a* are clamped between metal framing members *b*, *c*. In the form shown in Fig. 3, a central mid-rib *d* forms part of the member *b*. The metal frame members are connected together by autogenous welding. In the application of the invention to furniture such as wardrobes and tables, metal gusset-pieces are secured by autogenous welding or riveting in the angles formed by adjoining frame members.





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G. H. MANSFIELD, MANAGING DIRECTOR.

THE AIRCRAFT TRADER

MARKET TOPICS.

Prices are for quantities on usual terms.

July 25th, 1918.

COPPER.—No explanation has been received of the recent advance in price from U.S.A. It is, however, understood that the question will be reconsidered in August and a further advance is not at all unlikely. American buyers are making heavy purchases, and it is practically certain that there will not be any reduction in price, even if the question is brought up for reconsideration in August. The output continues to increase and supplies are not difficult to procure. The labour position, however, is becoming more acute, and it is expected that this will in the near future affect the output figures. The position here remains unaltered. The official prices are unchanged and supplies are being very strictly controlled.

COMPARATIVE PRICES.

Standard	£122 10 0 cash.
Highest price, 1917	£140 0 0
Highest price, 1916	£153 0 0

TIN.—The chief item of interest in this market is the news that the Governor of the Federated Malay States will, in future, control the buying of Tin in Singapore and Penang by issuing permits; and the price in the East will be the basis for fixing prices here and in New York. This arrangement should have a favourable influence upon New York prices

Prices here were recently advanced £10, following on an advance in Eastern prices of £7. This placed importers here in a favourable position and sellers were active. There has been a relapse this week and offers are scarce.

Consumers' immediate requirements are being favourably met, but there is great anxiety about future supplies. The outlook is certainly not very bright, although very fair quantities should be received during the next few days.

COMPARATIVE PRICES.

To-day (23rd)	£372 0 0 per ton.
A month ago	£332 0 0 per ton.
Highest price, 1917	£309 0 0 per ton.
Highest price, 1916	£205 0 0 per ton.

LEAD.—The position of this market remains unchanged. The official prices are unaltered, the recent advance in U.S.A. not having affected them yet. Supplies are fairly satisfactory.

STEEL.—This market is in a very healthy condition, the only fear being that if the military take many more skilled men away, the output will be very seriously menaced. It is, of course, a very complex question and a disaster can only be averted by the authorities co-operating very closely with the heads of the various mills. There is not a very liberal supply of Steel Sheets and firms should watch their stocks very closely. Supplies of Cast and High Speed Steels continue favourable.

Official prices remain unchanged.

TIMBER.—The most astounding item of interest in this market is the issue of a new Timber Control Order which came into force on July 22nd, 1918.

The Order affects all imported Timber, including plywood, boxboards and dressed timber; also home-grown Timber, including English ash. The Order is a very comprehensive document and buyers of Timber should apply to the Timber Supplies Dept., 80, Newman Street, Oxford Street, W.1., for a copy.

Firms will do well to obtain a copy of the Order as many of the clauses are not at all clear. As a matter of fact it is one of those documents which overworked and harassed managers have not the time to study properly, and, in order to help, a few of the most important regulations are given below:—

HOME-GROWN TIMBER.

Subject to the provisions of paragraph 15 hereof, and except as in this paragraph provided, no person shall:—

(a) Buy or enter into any contract for the purchase of (1) any timber in the log of the descriptions mentioned in Schedule B. of the Home-Grown Timber Prices Order, 1918, or (2) any converted timber of the descriptions mentioned in Schedule C. or D. of the said Order, or sawn to any other sizes, except under and in accordance with the terms of a Permit granted by or on behalf of the Controller.

No person shall:

(b) Buy or enter into any contract for the purchase of any standing or felled timber of the descriptions mentioned in Schedule A. of the Home-Grown Timber Prices Order, 1918, except under and in accordance with the terms and conditions of a Permit granted by or on behalf of the Controller.

IMPORTED TIMBER.

In this part of this Order the expression "timber" includes plywood, boxboards and dressed timber, but does not include standing timber.

Except as provided in paragraph 15 thereof, no person shall:—

(a) Buy or enter into any contract for the purchase of any timber imported into the United Kingdom except under and in accordance with the terms and conditions of a Permit granted by or on behalf of the Controller.

(b) Sell or enter into any contract for the sale of any such timber except to the holder of a Permit granted by or on behalf of the Controller, and then only in accordance with the terms and conditions specified in such Permit.

Para. 15.—Notwithstanding anything herein before contained a Permit shall not be required for the purchase of Home-Grown or Imported Timber not exceeding a total value of £5 in any one week, provided that at the time of purchase the purchaser signs a declaration in the form marked A. in the Schedule to this Order, and the signing of such declaration shall be a sufficient Authority to supply such timber in accordance therewith.

Permits will be applied for by consumers of timber on the new Form D., which covers Home-Grown Timber, and Imported Hardwood as well as Imported Softwood. Form D also embodies the old Form C.

It should be noted that the old application forms B. and C. must no longer be used.

There are rumours that Hardwoods will shortly be included in the above scheme. No official intimation of this has yet been received. The market is very quiet, although supplies are fairly satisfactory. It will be observed that the new Control Order does not cover Plywood manufactured here, although it is understood that this will shortly be controlled.

Official prices remain unaltered.

FABRIC.—There is nothing of vital interest to report; supplies are well maintained and a shortage does not appear to be likely as there appears to be sufficient flax available to keep the mills going until the new crop has been secured.

THE AIRCRAFT MANUFACTURING COMPANY'S SPORTS.

On Saturday, July 13th, the Aircraft Manufacturing Company, Ltd, held a sports meeting at the Grove Park Athletic Ground. The sports began at 2.30 p.m. with flat races, etc., and there was a goodly number of competitors for these events, which took up the time until 6 p.m. The prizes, given by the Directors and Management, were presented by Mrs. Holt Thomas. Mr. T. Clark, the chief steward of the afternoon, proposed a vote of thanks to which Mr. Holt Thomas replied on behalf of his wife. During the afternoon the band of the 6th Middlesex Regiment played, and in the evening there was an *al fresco* concert and a dance. That the affair was such a success was mainly due to the strenuous work of Mr. G. Dupree and Miss Ambler, who were given every encouragement possible by Mr. and Mrs. Harvey Thomas.

OF INTEREST TO MUNITION MAKERS.

Edgar Allen and Co., Ltd., of Sheffield, have issued a couple of interesting circulars describing respectively their "Red Label" and "K.9." tool steels. The "Red Label" variety is intended to be used for all ordinary purposes, and even where razor sharp edges may be necessary.

The "K.9." steel is intended for such work as dies, punches, gauges and master tools and other work of extreme accuracy. It is of the oil-hardening variety and possesses from 75 to 100 per cent. greater torsional resistance than ordinary carbon tool steels, such as the "Red Label" brand.

The circulars describe very clearly the heat treatment to which these steels should be subjected.

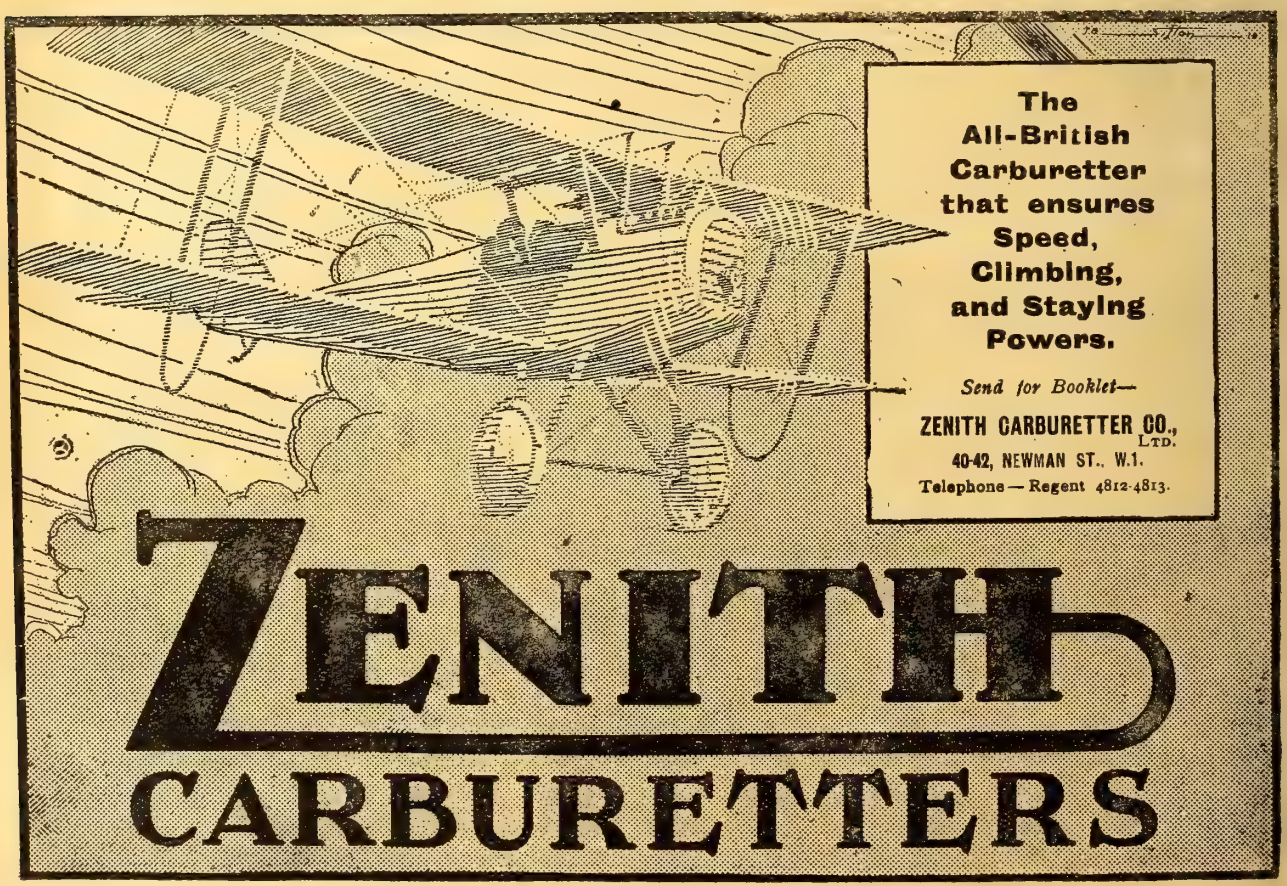
A.B.C.

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COMMERCIAL AERONAUTICS

AIRCRAFT AND ANIMAL TRACTION.

It may seem at first sight rather ridiculous to attempt to compare two systems of traffic so widely different as the speedy aircraft and the slow-moving animal-drawn vehicle. Further consideration will, however, I think, show that it is particularly necessary for the pioneer of aerial services to study first those districts in which the draught animal is the principal established competitor, with a view to deciding just how far he can be directly displaced by the aeroplane. The subject will be considered under the usual headings and in the same order as in previous articles.

Cost of Operation.

In this particular case, this aspect of the comparison might be better treated later. The comparative costs of operation of an aircraft service and a service dependent upon animals are entirely founded upon the distance to be covered, and the nature of the country to be traversed.

For very short distances, provided loads are suitable, animal traction is often even cheaper than motor traction, particularly if roads are indifferent or absent. In a fully developed country nobody would dream of using animals for long-distance haulage or conveyance. Thus it is only with regard to undeveloped countries that we need attempt to institute any comparison.

In such cases the aircraft begins to become the more economical method as soon as distances become great

In some districts animal traction is very expensive owing to the prevalence of diseases and the loss of stock due to the bites of venomous insects.

Wherever distances are great, the cost of animal traction becomes heavy, because it is slow, and much time must, therefore, be occupied by the man in charge, whose wages pile up accordingly. Moreover, there are difficulties with regard to the provision of food and drink for the beasts and their attendants. Much of the useful load capacity may have to be sacrificed to the need of carrying supplies to be consumed en route.

Some districts are practically impassable to animal traction on account of extensive deserts, jungles, or swamps.

Roughly speaking, the aircraft will be found to be the cheaper means of conveyance in all undeveloped countries for moderate loads and for distances which cannot be covered by animals within three days at the most.

Standing Charges.

Here, again, comparison is difficult. The draught animals capable of conveying a given load will cost less than an aeroplane of similar capacity. Under some conditions their depreciation will not be excessive. Under others it will be immense.

Anything in the nature of an express service, such, for example, as a mail service conducted by relays of horses, involves very rapid depreciation of stock.

Animal transport shares to some extent with the aeroplane the advantage of being independent of the existence of a prepared route, but does not share this fully.

Combined Standing and Running Costs.

From the comments already made it will be apparent that over any considerable distance the aeroplane service will have the advantage as regards total costs against the animal service.

Mobility.

As regards mobility, the aeroplane can travel equally over water and land, over desert and forest. The use of draught animals is circumscribed by the presence of natural obstacles.

On the other hand, the animal has the particular advantage of being able to travel exactly from one point to another, and in not having to stop or start upon prepared surfaces. This form of mobility is important only in connection with short journeys.

For anything approaching a long journey, the best all-round mobility from door to door would be obtained by using animals only for the conveyance of loads to the aeroplane starting ground, and at the other end of the journey from the landing ground to the destination.

The two systems working together can be as nearly as possible independent of the existence of any roads or tracks, and therefore it is upon the co-operation of these two systems that we must depend for early development of young countries before the cost of road or rail is justified by the volume of traffic obtainable.

Speed.

As regards speed, comment is needless. The aeroplane is the fastest method of conveyance, and animal traction the slowest. It would only be where journeys are extremely short that the special mobility of animal traction could conceivably balance the superior speed of the aeroplane.

Frequency of Service.

Under this heading the aeroplane probably has the advantage since it can travel in single units, whereas animal-drawn vehicles in uncivilised countries would probably have to travel in convoys. Consequently, the aeroplane would deal with small loads without delays, but similar loads to be conveyed by animals would have to wait until a convoy had been completed.

Punctuality and Regularity.

Here neither system is perfect. The regularity of an aeroplane service must be to some extent dependent upon the weather. So must also the animal service, the possibility of which may be affected by periods of drought or of violent rains.

In many parts of the world only a seasonal service by animals is possible, and it may be out of question to maintain any communication except during only a few months of the year. During the majority of the time the maintenance of the service may be out of the question owing to the pervalence of floods, or, on the other hand, owing to the lack of water over long distances.

Again, as already mentioned, the regularity of an animal service is apt to be disturbed by insect pests. On the whole, the aeroplane must certainly have the advantage in respect of punctuality and regularity.

Provisional Conclusions.

Altogether we are led to the conclusion that there is an almost unlimited opening for the use of aeroplanes in all those parts of the world where some kind of communication must be maintained or is highly desirable, and where at present only animal traction is available or justifiable in view of the cost of road or rails and the small volume of the traffic. In the opinion of the writer the use of the aeroplane in fully developed countries for many years to come will be infinitesimal compared to their value in numberless districts which up to the present have hardly realised the disadvantages under which they labour through lack of communications.

The aeroplane fortunately gives such districts the opportunity of establishing communications, certainly limited in carrying capacity, but ideal from the point of view of speed, and representing a marked improvement as regards regularity, safety, and economy.

Animals will continue to be used for purely local purposes in undeveloped regions, but where there is any advantage to be obtained by connecting localities not immediately adjacent to one another, the aeroplane is the one great solution of the problem.

If development comes gradually it will only be because people who are used to the settled order of things are slow to realise the benefits derivable from a new order. The change proposed to them is absolutely revolutionary, and it will perhaps be only when a few of the more far-seeing people have achieved astonishing results and amassed immense wealth by appreciating what modern communications can do for them, that the bulk of the settlers and potential settlers will realise that, backed by an aeroplane service, they may develop the natural wealth of the most remote districts, and participate in most of the essential advantages of good communications. The absence of these has up to the present been the reasons why population is often confined to the coast lines, and only, so to speak, oozes gradually inland, even though wonderful sources of wealth and prosperity could be tapped if an inward development were accelerated.

CONGRATULATIONS.

His many friends in England will be interested to hear that M. Paul Gondre, who was so well known before the war as chief engineer to the late Mr. Gustav Hamel, was married on June 26th to Mademoiselle Mathilde La Caze, of Grisolles (Tarne-et-Garonne).

At the outbreak of war M. Gondre joined the French Aviation Service and did excellent work as an engineer until his health gave way under the rigours of Service life, and he was sent to a sanatorium in the south of France. On his partial restoration to health he was demobilised, and since then he has been working in the south. He hopes soon to return to his aviation work, and there is no doubt that one of his immense experience and of his mental and mechanical ability will be of great use to French Aviation. The address of M. and Mme. Paul Gondre is 27, rue de la Pomme, Toulouse.



AERO ENGINES

S.B.A.C. THE SOCIETY OF BRITISH AIRCRAFT CONSTRUCTORS

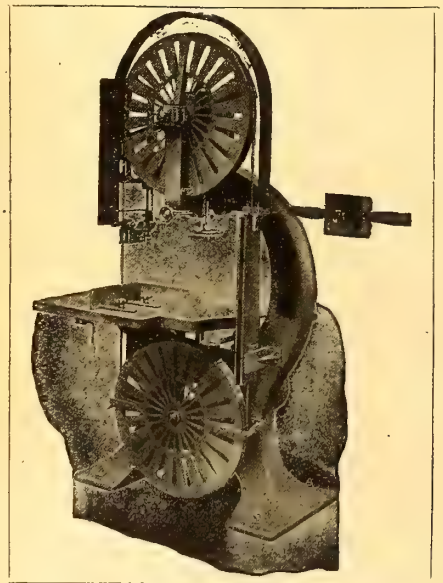
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AIRCRAFT FINANCE

CURRENT TOPICS.

Buoyant Stock Exchange.

Buoyant activity still prevails in the Stock Exchange, and it is spreading, which augurs well. No longer is it confined to Industrial specialities, but has spread to Home Railway securities, which are receiving rather better interim dividends than had been expected. As a matter of fact, during the past year or so, they had sunk to a level which, all things considered, was unjustifiably cheaper. Now they have turned, one hopes that the prevailing optimism will not push prices up to an unreasonably high level.

Where the Money Comes From.

It is not in the least remarkable that most of the business in the House should emanate from the Industrial districts of the North and the Midlands, where money is being earned in abundance. Contributing to the stream is the money that cautious people kept on deposit at a fairly decent rate of interest with their banker, and which is being slowly forced out by the Treasury measure for stimulating National War Bond purchases. By the way, it is satisfactory to note from the revenue statements that the past week's receipts from War Bond sales increased by over two and a half millions to £21,184,000.

Attractions of Treasury Bills.

Revenue received from the sale of Treasury bills was also on a larger scale, evidently because these are at last appealing to a larger body of people. Treasury bills ought to appeal to a still larger number of manufacturers who have some surplus money lying fallow for a few months. They have a currency of three or six months, and offer 3½ per cent., on the most liquid investment conceivable.

Vickers Dividend Rumours.

There has been a temporary pause in Aircraft and similar shares, except in one or two cases. Vickers, for instance, have been in increasing demand on the rumour that, accompanying the interim dividend, the much-delayed accounts will come. It is possible, but the rumour should not be taken too seriously. The dividend, however, may be interesting, because the company has promised to give up paying it free of income-tax, compensating shareholders by paying a bigger gross dividend.

ROLLS-ROYCE.

The adjourned annual general meeting of the shareholders of Rolls-Royce, Ltd., was held at the Midland Hotel, Derby, last Friday, Mr. Ernest Claremont presiding.

The Chairman said: The balance-sheet was now in the hands of shareholders, and he was sure they would agree that it was very satisfactory. The capital on the year under review remained unaltered, but they would recollect that at the last meeting it was doubled by capitalising reserves, and this addition would appear in next year's balance-sheet. Creditors showed an increase of £468,000 odd, due largely to providing for estimated excess profits tax and to increased stocks necessitated by the expansion of the business.

Position of the Business.

The stock increase was £416,000. This was, he considered, one of the most important items in a balance-sheet, and one that required careful comparison with the past years to give a true indication of the business. Its increase could indicate increased or reduced prosperity according to its relation to the turnover. In this case he felt satisfied that the increase indicated increased prosperity and was fully warranted by the increased turnover. The reserve fund and investment contingency fund remained unaltered. The war contingency account, which was originally called the debt guarantee fund, showed an increase of £20,000.

Writing Down Property.

Turning to the assets side of the balance-sheet, it would be noticed that the item of property was divided into two portions, namely, pre-war and post-war. The former was reduced by depreciation by £15,521; the latter, which was £107,143, was similarly reduced by £22,737, but the addition of £69,362 estimated post-war values gave a net result of £153,767. Debtors showed an increase of £143,986, which was off-set by the heavy increase noticed in the other items. We now come to the most important part of the balance-sheet, the profit, which was £142,056, and this, with £43,115 brought forward, shows a total available of £185,172.

Explanation of Profits.

This is the first time since the outbreak of the war that we have earned profits equal to those of peace times. Since the outbreak of war the company has, as I have recently explained to you, been working at a great disadvantage. It has had to place aside the work it had for years been engaged upon and take up the manufacture of other goods required by the Government, and at the same to continually and greatly extend its premises and capacity. It could hardly be expected to make profits equal to those of peace times under such difficult conditions, but it has made substantial profits in increasing amounts year by year until to-day the momentum which it has gradually been creating has carried it beyond any previous figure. Until now the average of the profits during the war has been less than the highest peace-time figure by 25 per cent., so that the company can take credit for having made its utmost efforts in the national interests at little advantage to itself. The profit is ascertained after making provision for the estimated excess profits tax.

Big Extensions to Plant.

While we have made an increased profit, it is, of course, by no means proportionate to the increased output. The business has been extended during the war to several times its original size, but in these times we must, of course, be content with a moderate return for our efforts, since they are entirely directed in the prosecution of the war. I wish the company could enjoy a profit proportionate to its turnover, and to which in ordinary times it would be entitled. I feel sure the company, by the marvellous reputation it has made during the war, will eventually be repaid indirectly for all it has done and for the sacrifices it has so willingly made in the national interests.

Changes in the Executive.

In conclusion the chairman thought it necessary to explain to the shareholders that this balance-sheet did not necessarily form a sound basis for assuming profits in the future, if only because this year the company was allowed to retain certain profits to compensate it for its reduced profits during the years 1914, 1915, and 1916. Such an accrued advantage might never occur again. They were in uncertain times, and the future was full of possibilities for or against them. Mr. Basil Johnson, a

CURRENT SHARE QUOTATIONS.

July 29th, 1918.

Aircraft Mnfg. Co.	7% cum. pref. £1 ...	22/6	23/6
	7% cum. & ptg. "B" pref., (fully paid) ...	22/6	23/6
Armstrong (Sir W. G.) Whitworth & Co., Ltd.	4% cum. pref. £5...	3¼	3⅜
	5% 2nd. pref. £1 ...	16/-	17/-
	£1 ordinary	43/6	44 6
Austin Motor Co., Ltd.	7% cum. pref. £1...	18/6	19/6
	£1 ordinary	25/6	26/-
Birmingham Small Arms Co., Ltd.	£1 ordinary	72/-	73/-
	5% cum. "A" pref.	4	4⅛
	6% cum. "B" pref.	20/-	21/-
Boulton & Paul, Ltd., 5% cum. pref. £1		⅜	⅝
Brown Bros., Ltd., 6% cum. pref. £5...		4	4½
Darracq (A) & Co., (1905) Ltd.	£1 ordinary ...	35/6	37/6
	7% cum. pref. £1...	15/16	1 1/16
Electric Construction Co., Ltd.	7% cum. pref. £1 ...	20/6	21/6
	£1 ordinary	25/6	26/6
Fellows Magneto Co., 8% cum. partip. pref.		17/-	18/-
General Electric Co., Ltd.	6% cum. pref. £10 ...	10½	10¾
	£10 ordinary	27	30x
Gwynnes, Ltd., 5% cum. pref.		5¼	5⅝
Ordinary		33/6	34/6
Greenwood & Batley, Ltd., £10 ordinary		15	16
Humber, Ltd., 6% cum. pref. £1		15/3	16/3
£1 ordinary		24/-	25/-
Napier (D) & Son, Ltd., 7½% cum. pf. £1		19/3	20/3
£1 ordinary		33/-	34/-
Peter Hooker, Ltd., £1 7% cum. partic. 1st pref. ...		18/6	19 6
Rolls Royce, Ltd., £1 ordinary		47/-	48/-
Rudge Whitworth, Ltd. £1 ordinary ...		44/-	46/-
Ruston, Proctor & Co., Ltd.	£1 ordinary	28/-	29/-
	5% cum. pref. £1 ...	17/-	18/-
Sunbeam Motor Car Co., Ltd., £1 ord. ..		3¾	4
Straker Squire, Ltd. (1913), £1 ordinary		21 6	22/6
S. Smith & Son, Ltd. (Motor Accessories) £1 ordinary		26 6	27/6
Triplex Safety Glass, £1 ordinary... ...		25/6	26/-
Vickers, Ltd., 5% pref. stock...		82	85
5% pref. shares. £1 ...		17/6	18 6
£1 ordinary		46 9	47 3
Wm. Beardmore & Co., Ltd., 6% c. pf. £1		18/6	19 6

GENERAL INFORMATION.

Armstrong, Whitworth (1916)
Austin Motor (1916)
Rolls Royce (1917)
Rudge Whitworth (1916 & 1917
Smith (S.) & Sons (1917)
Sunbeam Motor
Thorneycroft (J. I.) & Co.
Vickers (1916 & 1917)

} Owing to the difficulty of estimating liabilities under Finance and Munitions Acts, the accounts will not be ready until a later date.

x—ex dividend

member of the staff, had recently been promoted to the position of general manager, and, to prevent confusion, the title of Mr. Claud Johnson, the general managing director, had, without detracting from his authority in any way, been altered to managing director.

COMPANY ANNOUNCEMENTS.

NEW COMPANIES REGISTERED.

The files of the following new companies are available for inspection at Somerset House.

Henry J. Brewster and Co., Ltd.—Private company. Registered July 23rd. Capital, £15,000 in £1 shares (10,000 7 per cent. preference). To take over the business of engineers, contractors, machine tool makers, commission agents, etc., carried on by H. J. Brewster, as "Henry J. Brewster and Co.," also to carry on the business of aircraft and component manufacturers, electrical and motor engineers, etc. The subscribers (each with one share) are:—E. V. Horsham, 11, Queen Victoria Street, E.C.4, secretary and manager; Miss E. G. Washbourne, 90, Brakefield Road, Tooting Common, S.W.7. The first directors are:—H. J. Brewster and E. V. Horsham. Registered office: 11, Queen Victoria Street, E.C.

Harry A. Gee and Co., Ltd.—Private company. Registered July 22nd. Capital, £6,000 in £1 shares. (2,000 preference, 3,000 "A" ordinary, and 1,000 "B" ordinary.) Mechanical, aircraft, and general engineers, founders, smiths, builders, contractors, motor-car, coach and vehicle builders, tool manufacturers, electricians, etc. The subscribers (each with one ordinary share) are:—H. A. Gee, 1-3, Winchester Place, Park Road, East Acton, W., engineer; R. N. Marrable, Rookwood, New River Crescent, Palmer's Green, N., assistant works manager. Permanent chairman: H. A. Gee. Registered office: 1, Winchester Place, Acton, W.

THE CELLULOSE AFFAIR.

The following leader from the "Morning Post" of July 29th will be read with considerable interest by the Aircraft Industry, as it affects the whole "dope" question:—

The series of reports of the Select Committee on National Expenditure, of the fifth of which we published a summary on Saturday, is becoming an invaluable guide to future Ministers in how not to do it while spending as much as possible on the process. The Ministry of Munitions has again been under the harrow, and again emerges in an extremely dishevelled and discreditable condition. This time the trouble is not the failure to keep intelligible accounts, or the success in paying for goods received twice over, or the remarkable disappearance from the face of the earth of a trifle of three millions sterling, but the achievement of very nearly stopping the supply of a valuable chemical compound called acetate cellulose, and certain other chemicals.

Cellulose acetate is used for making a skin upon aeroplane wings and also for aeroplane wind screens. The measure of the importance of its supply is therefore the measure of the importance of the supply of aeroplanes.

We need hardly say that before the war and during the early part of the war cellulose acetate was not manufactured in England. It was made (equally of course) in Germany, and also at Lyons, by the Usines du Rhône, and at Basle by the Cellonite Company. Private firms in this country imported from both these firms.

In 1915 the War Office bought direct from the Usines du Rhône. The Cellon Company in England was then acting as the agent of the Usines du Rhône. The War Office invited three companies to submit estimates for establishing a manufactory in England. Of these three the Cellon Company was not one, so that it could not submit a tender, and two of the three failed to submit tenders. The only company that sent in a tender was the Swiss company, the Cellonite Company, of Basle. It was accepted by the War Office.

The Cellonite Company, in the person of Dr. Camille Dreyfus, then opened negotiations with the War Office in respect of the financial arrangements of the contract, which, it will be observed, were not included either in the tender or its acceptance. Eventually the War Office agreed to return excess profits to the company for five years in order to reimburse it for its capital expenditure upon the erection of an English factory, on condition that none save Government orders should be executed, and that the prices charged should be "reasonable."

The matter was settled in these terms before the Treasury was consulted. In the meantime, the Cellon Company, representing the Usines du Rhône, and another, the United Alkali Company, offered to erect factories in England, but "were not, however, encouraged to go on." So they left off.

The new British Cellulose Company, the only English source of supply, was formed in March, 1916. According to the report of the Committee it produced nothing until April, 1917, and not much then. It was not supplying a considerable quantity until July, and that amount was "far below the promises."

At this time, if not before, it seems that the Department of Aeronautical Supplies at the Ministry of Munitions took over the responsibility for the new company, which was cheerfully embarking upon a capital expenditure of over three millions sterling. The company received no sanction for these commitments; and last month the Ministry cancelled the original financial agreement, undertook to make loans on account of capital expenditure, and placed contracts to the value of some three millions with the company.

The Ministry also forbade the import of cellulose acetate by other companies who were under contract to import it, and declined all offers made by other companies to manufacture in England. The Ministry have thus created, at vast and still incalculable expense, a monopoly which has hitherto failed to supply the needs of the country.

The Select Committee withhold their comments upon the existing financial arrangements until they have been settled. In the meantime, we would suggest that the person or persons responsible for these deplorable transactions, for which Mr. Churchill is technically responsible, should be dealt with as they deserve. But, of course, it is nobody's fault.

In another column we publish a letter from the manager of the British Cellulose Company in which he complains that the company have not been invited to place rebutting evidence before the Committee, and asks for a suspension of judgment. This seems quite a fair request, which deserves a response.

[The letter in question reads as follows:—Ed.]

To the Editor of the "Morning Post."

Sir,—My directors have seen in the Press extracts from the fifth report of the House of Commons Select Committee on National Expenditure, in which reflections are made not only against the Ministry of Munitions but against this company. The directors of this company placed themselves unreservedly at the disposal of the Committee to supply any information the Committee might have required in relation to the measures adopted at the request of the War Office to meet the needs of His Majesty's Government at a time of great national emergency.

It is important to remember that evidence before the Select Committee was not tendered upon oath, and that this company had no opportunity of hearing the statements of other parties who appeared before the Committee. At this stage my directors only desire to say that at no time during the proceedings of the Committee was there any indication of any allegation against the company. If the company had been aware that evidence was being given reflecting on the formation and administration of the company, my directors could have placed such evidence before the Committee as would have made it impossible for them to have presented such a report.

My directors venture to add that the report makes no reference to the important fact that this company came into existence for the specific purpose for providing our Air Services with a vital necessity, for which at that time the Government were entirely dependent upon foreign sources of supply. In these circumstances my directors respectfully request that judgment may be suspended until the whole facts can be made available.—Yours, etc.,

A. E. Showell.—Manager and Secretary, British Cellulose and Chemical Manufacturing Co. (Ltd.), 8, Waterloo Place, July 27th.

[Closely interwoven with the whole of this "affaire" seems to be the question of "Standard Dope," which also appears to need investigation. It is understood that all the formulæ of all the "dope" firms had to be submitted to official "experts," that these "experts" ultimately persuaded the Supply Department to wash out all proprietary dopes made by firms who did all the early experimenting, and gained knowledge and lost money accordingly, and that a standard dope, made to the "experts'" formula was made compulsory. The result was that any firm without experience could make this standard dope as well—theoretically—as the oldest dope firms.

In consequence new firms were able to come in and cut prices, besides—it is alleged—making inferior dope in some cases.

Another point on which some people are much concerned is that whereas the older dope firms, having no pre-war standard of profit and very small capital, are mulct of some 75 per cent. or so of the lawful reward of their initiative, energy and industry, by excess profit duty, the British Cellulose Co., having bargained that they shall keep all their war-profits to pay for their plant, are not called upon to pay any excess profit duty. Which, seeing that the older firms have gone through all the hard times and hard work, seems very unfair, no matter how unimpeachable may be the commercial descent, manners, customs and morals of the British Cellulose Company. Therefore the matter seems to need clearing up and putting on a fair and square footing.—Ed.].

THE LONDON AIRCRAFT COMPANY'S OUTING.

On Sunday, July 28th, the Administrative Staff of the London Aircraft Company, Ltd., spent the day on the river. They left Richmond Pier about 11 a.m. and went up the river to Shepperton Lock. Mr. F. J. Allen, Mr. J. J. Morch and Mr. Crisp were present. The A.I.D. Staff were included in the invitation by special invitation. The whole affair was a great success.

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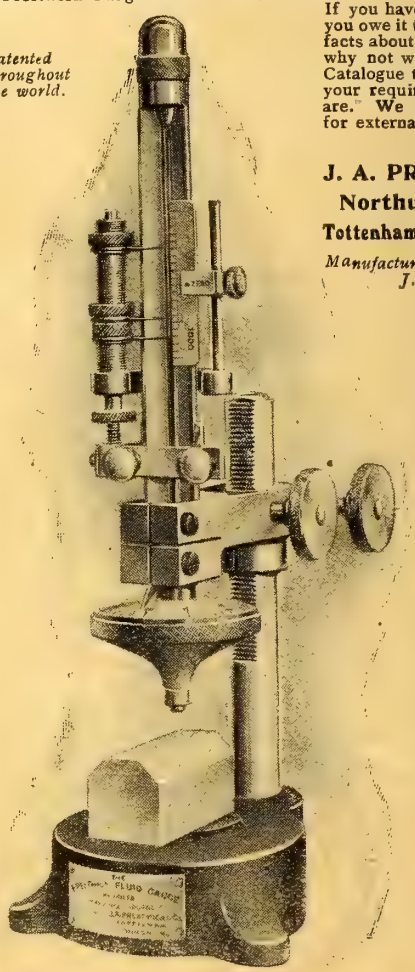
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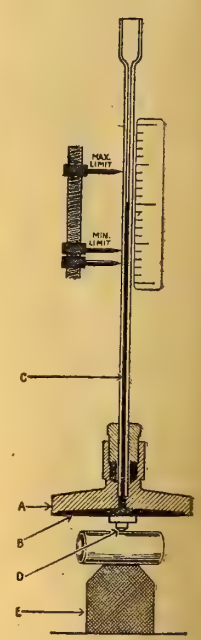
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D—Hardened Steel Anvil of Diaphragm B.
E—Fixed Anvil.

(Continued from page 382.)

Temp. Capt. J. H. TUDHOPE, M.C., R.A.F.

For conspicuous gallantry and devotion to duty in fighting with exceptional dash and skill over a period of nine months, when he carried out numerous reconnaissances, flying low and engaging with bombs and machine-gun fire enemy troops, guns, and transport. He obtained many direct hits and inflicted heavy casualties, often flying under very difficult weather conditions. He has crashed three enemy aeroplanes and shot down two others out of control. His determination and courage have been a brilliant example to the pilots of the flight he has been leading. (M.C. gazetted March 26th, 1918.)

THE MILITARY CROSS.

Lt. J. W. BAKER, R.G.A. and R.A.F.

For conspicuous gallantry and devotion to duty in carrying out low-flying reconnaissances and contact patrols under heavy machine-gun, rifle, and anti-aircraft fire, when he remained in the air for long hours, often under abnormally bad weather conditions and often in darkness or thick mist. On one occasion he fired into enemy troops and transport, causing great confusion, and remained over their lines taking notes until quite dark, when he returned with his machine riddled with bullets. On every flight he obtained most important information, which was dropped at headquarters, and throughout the period his work has been magnificent.

AIR MINISTRY, July 26th.

R.A.F.—The follg. temp. appt. is made at the Air Ministry :—Staff Officer, 3rd Cl.—Lt. E. J. D. Townesend, and to be temp. Capt. whilst so empld., vice Lt. (temp. Capt.) F. A. M. Rawes, June 24th.

The follg. temp. appts. are made :—Group Comdr.—Lt.-Col. E. A. D. Masterman, C.B.E., and to be temp. Brig.-Gen. whilst so empld., July 3rd.

Staff Officer, 1st Cl.—Capt. (temp. Maj.) T. E. Longridge, and to be temp. Lt.-Col. whilst so empld., July 19th.

Staff Officers, 2nd Cl.—And to be temp. Majs. whilst so empld. :—Capt. C. S. McNab (from April 1st to June 28th); Capt. H. A. P. Disney (from April 1st to May 27th); Lt. (temp. Capt.) V. Buxton, vice Capt. O. T. Boyd, M.C., July 7th; (T.) Sec. Lt. H. W. Sidley, May 18th. The name of Lt. (temp. Maj.) H. St. C. Smallwood is as now described, and not as in the "Gazette" of June 4th.

Staff Officers, 3rd Cl.—And to be temp. Capts. while so empld., if not already holding that rank :—(T.) Sec. Lt. H. H. Harries, May 27th; Lt. (temp. Capt.) A. E. Illingworth, July 6th. The surname of Capt. E. A. Beaulah is as now described, and not as in the "Gazette" of July 2nd. The initials of Lt. (temp. Capt.) G. H. L. Sweet are as now described, and not as in the "Gazette" of July 19th.

FLYING BRANCH.—Capt. (temp. Maj.) H. I. F. Yates, M.C., to be temp. Lt.-Col. whilst empld. as Lt.-Col. (A. and S.), July 12th.

Capt. (temp. Maj.) G. S. Trewin to retain his temp. rank whilst empld. as Maj. (O.) from S.O., July 8th.

Lts. to be temp. Capts. whilst empld. as Capts. (A. and S.) :—F. R. McCall, June 30th; H. R. Eycott-Martin, (Hon. Capt.) B. N. Harrop, July 13th; E. J. B. How, E. L. Roberts, July 15th; E. G. Brookes, T. M. Williams, July 19th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A. and S.) :—H. H. Newman, May 29th; J. A. Martin, June 13th; J. G. S. McGeown, June 15th; J. K. Lancaster, June 17th; C. S. Clarke, June 18th; E. A. Spence, June 27th; E. I. Mayne, July 2nd; O. J. Orr, July 3rd; H. Sharkey, July 5th; J. Lightolier, G. A. R. Muschamp, S. McLeod, July 6th; O. J. Noonan, July 9th.

The follg. are granted temp. commns. as Sec. Lts. (A. and S.) :—H. J. Martin (Sec. Lt., Kent Cyclist Bn., T.F.), May 11th; H. E. Turnley (Capt., S.A., Gen. List), and to be Hon. Capt., May 19th; R. N. Haile (temp. Lt., Leics. R.), and to be Hon. Lt., May 23rd; R. Auld (Lt., R. Sco. Fus., T.F.), and to be Hon. Lt., May 25th; G. F. Davis (Lt., E. Kent R., T.F.), and to be Hon. Lt., June 15th; R. Davie (Lt., R. Highrs., T.F.), and to be Hon. Lt., June 18th; H. R. Dennison (Capt., Br Columbia R., C.E.F.), and to be Hon. Capt., June 20th; G. H. Grimshaw (temp. Sec. Lt., S. Lan. R.), July 6th; J. V. Gascoyne, July 19th; A. R. Coppin (late Sec. Lt., S. Staffs R.), July 20th; S. C. H. Biddle, July 22nd.

The follg. Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns as Sec. Lts. (A. and S.) :—A. L. Coulson, J. W. Dowling, W. S. Haney, H. F. Farncomb, F. E. Rees, G. A. Davis, June 5th; J. P. Corkerry, W. E. Lewis, A. J. Mantle, H. M. Schofield, F. C. Wareham, June 7th.

W. J. Dooley (late Lt., Suffolk R., T.F.) is granted a temp. commn. as Sec. Lt. (K.B.), and to be Hon. Lt., July 20th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (Obsr. Officers) :—W. G. P. Dyson, June 12th; I. P. Aitken, G. T. Coles, July 10th; N. J. Adams, July 12th; J. T. Potts, C. M. Whitham, T. Sydenham, T. P. Speakman, July 13th; H. M. Cartwright, J. L. M. Oliphant, July 20th.

The follg. are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—F. H. Wrigley (temp. Sec. Lt., R. Ir. R.), April 20th; R. Kelly (temp. Sec. Lt., Rif. Brig.); R. P. Gundill (temp. Sec. Lt., Yorks L.I.), July 6th; S. J. H. Pile, M.C. (temp. Sec. Lt., Middx. R.), July 9th; T. L. Jones, (temp. Sec. Lt., Welsh R.), S. P. Scott (Sec. Lt., N. Lan. R., T.F.), July 10th; S. W. P. Foster-Sutton (Sec. Lt., E. Kent. R.), D. J. Muil (Sec. Lt., R. War. R., T.F.), H. B. Steckley (Sec. Lt., Lond. R., T.F.), July 12th; J. P. Anderson (Lt., Sco. Rif., Spec. Res.) and to be Hon. Lt., G. M. Jeffrey (Sec. Lt., High. L.I., Spec. Res.), July 13th; D. H. Burrows (Lt., Quebec R.), and to be Hon. Lt., C.E.F., July 18th; A. F. Beckett (Sec. Lt., Leic. R., T.F.), F. W. Bate (Sec. Lt., L'pool R., T.F.), J. Clarke (Sec. Lt., S. Lan. R., T.F.), L. J. Evans (Sec. Lt., Lincs. R., T.F.), E. P. C. Godsil (temp. Sec. Lt., Labour Corps), J. A. Holmes (temp. Sec. Lt., Northd. Fus.), H. Jonsson, M.C. (Lt., Br. Columbia R., C.E.F.), and to be Hon. Lt., R. W. Jackson (Lt., R.F.A., Spec. Res., and to be Hon. Lt. J. E. Purslow, M.C. (Capt., Saskatchewan R., C.E.F.), and to be Hon. Capt. T. J. Ruston (Sec. Lt., W. York. R., T.F.), A. C. Rankin, M.C. (Capt., R.E., Spec. Res.), and to be Hon. Capt., R. S. Smith (temp. Sec. Lt., Labour Corps), F. P. J. Travis (Lt., Quebec, R., C.E.F.), and to be Hon. Lt., C. Wright (Sec. Lt., W. Rid. R., T.F.), July 20th; A. Turnbull (temp. Lt., A. Cyclist Corps), and to be Hon. Lt., July 22nd.

Lt. J. A. Morell relinquishes his commn. on acct. of ill-health caused by wounds, and is granted the hon. rank of Lt., July 27th.

Lts. relinquish their commns. on acct. of ill-health, and are granted the hon. rank of Lt. :—D. W. Winter, W. E. Wright, July 27th.

Lt. L. E. Nicholson resigns his commn., and is granted the hon. rank of Lt., July 27th.

Lt. (Hon. Capt.) N. S. Caudwell (Capt., W. Ont. R.) relinquishes his commn. on ceasing to be empld., July 18th.

Lt. (Hon. Capt.) G. P. C. Greene resigns his commn., July 27th.

Sec. Lts. relinquish their commns. on being found permanently unfit as Pilots or Observers :—H. C. Belore, C. H. G. Collins, H. F. K. Greaves, A. N. Tuck, July 27th.

ADMINISTRATIVE BRANCH.—Lt. (temp. Capt.) H. Jullerot, from (T.), to be temp. Maj. while empld. as Maj., July 3rd.

The follg. are granted commns. as Capts. :—C. Hunt (late Capt., Hants. R.), April 2nd; A. H. Hulton (Capt., R.A., T.F.), April 15th.

Lts., from (A. and S.), to be Lts. :—R. N. Ball, July 17th; G. A. Masters, July 22nd.

Sec. Lt., S. H. Tigg to be temp. Lt. while empld. as Lt., June 1st.

H. W. Liversidge is granted a temp. commn. as Lt., July 22nd.

The follg. are granted temp. commns. as Sec. Lt. :—R. P. Nethercot, M.C. (Lt., W. York. R., T.F.), April 25th; G. H. Allender, July 19th; P. Gwynne-Norton (late Lt., R.F.A.) and to be Hon. Lt., G. J. C. W. Fitzwilliam (late Sec. Lt., North'n Yeo.), E. H. Brading, A. J. Bull, J. Davies, J. Harvey, J. Mahoney, W. W. Shuker, T. A. G. Strickland, July 20th; E. M. Wood (late Lt., M.G.C.), and to be Hon. Lt., E. B. Addison, F. A. Dinsdale, P. Fearnley, A. H. R. Gowie, P. C. Ingram, J. M. C. Lawson, E. Maffey, H. C. Martin, H. A. Parsons, July 22nd; W. H. Johnson, July 26th.

The notification in "Gazette" June 25th concerning D. McCulloch is cancelled.

The notification in "Gazette" July 23rd regarding follg. officers is cancelled :—G. Barfoot-Saunt, S. Hooper, H. E. F. Saunders.

Lt.-Col. J. M. Rose (Lt.-Col., R.A.M.A.) relinquishes his commn. on ceasing to be empld., July 9th.

Sec. Lt. P. J. Lockwood relinquishes his commn. on acct. of ill-health, and is granted hon. rank of Sec. Lt., July 27th.

TECHNICAL BRANCH.—Lt. (temp. Capt.) C. G. Coe to be temp. Maj. while empld. as Maj., June 1st.

Sec. Lts. to be temp. Lts. while empld. as Lts. :—G. R. Cobb, J. R. Bedford, June 11th; G. Barfoot-Saunt, July 1st.

Lts. (A. and S.) to be Lts. :—(Hon. Capt.) S. Hooper, June 29th; H. E. F. Saunders, July 10th; (Hon. Capt.) A. S. Goodwin, July 13th.

MEDICAL BRANCH.—The follg. are granted temp. commns. as Capts. :—A. A. Wilkinson, R. E. V. Hale, July 22nd.

The follg. are granted temp. commns. as Lts. :—C. M. John, July 18th; K. Batten, July 19th; G. Hughes, H. T. Rymer, J. Valerie, July 22nd; J. P. Wells, July 24th.

MEMORANDA.—Maj. (temp. Lt.-Col.) J. G. Weir, C.M.G., to be temp. Brig.-Gen. while spec. empld., July 6th.

J. A. Houison-Craufurd (Hon. Lt.-Col.) is granted temp. commn. as Lt. Col., and not as stated in "Gazette" May 3rd.

Capt. J. Hamilton (Capt., Gen. List) relinquishes his commn. on ceasing to be empld., July 1st.

WAR OFFICE, July 29th.

REGULAR FORCES.—INFANTRY (ATTD.).—York and Lanc. R.—Temp. Capt. to be temp. Capt. : E. G. G. Woolhouse, from R.A.F., June 7th, seny. March 16th, 1915.

FROM THE COURT CIRCULAR.

BUCKINGHAM PALACE, July 25th.

The King held an Investiture in the Quadrangle of the Palace this morning.

The following officer was introduced into the presence of The King, when His Majesty invested him with the Insignia of the Division of the Order into which he has been admitted :—

THE DISTINGUISHED SERVICE ORDER.

Lt.-Col. Arthur Boddam-Whetham, R.A.F.

The King then conferred decorations as follows :—

THE MILITARY CROSS.

Capt. Thomas Lowe, R.A.F.
Capt. Jack Sorsoleil, R.A.F.
Lt. Douglas Dening, R.A.F.

BUCKINGHAM PALACE, July 26th.

The King, accompanied by The Queen and the Prince Albert, and attended by General Sir William Robertson (General Officer Commanding-in-Chief Great Britain), Major-General E. B. Ashmore (Commander-in-Chief of the London Air Defence Area), and Captain B. Godfrey-Faussett, R.N., visited some of the London Air Defences this morning.

OFFICIAL COMMUNIQUES.

NAVAL.

ADMIRALTY COMMUNIQUÉ.

JULY 27th.—In Home waters, during the period July 18th-24th inclusive, Royal Air Force units working with the Navy have maintained escort, hostile aircraft, and anti-submarine patrols.

Enemy aircraft activity over the Belgian coast and in close proximity to the English coast has been above normal, and several engagements have taken place. Six enemy machines have been destroyed, and eight driven down out of control.

Five of our machines are missing.

Our bombing formations have attacked military objectives at Zeebrugge, Bruges, and Ostend, over 15 tons of bombs being dropped with good results.

Enemy destroyers and trawlers have also been attacked, a direct hit being obtained on one trawler, which was subsequently observed to be in a sinking condition.

MILITARY.

G.H.Q. COMMUNIQUÉS.

JULY 23rd. 6.43 p.m.—On the 22nd inst. improved weather was accompanied by greater activity in the air than has been possible during the past few days. Several long-distance reconnaissances were completed by our machines and many photographs taken.

Twenty-three tons of bombs were dropped by us on the railway stations at Cambrai, Bray, and Lille, on ammunition dumps near Armentières and Bapaume, and on hostile billets along the whole front.

In air fighting 23 hostile machines were brought down, and three others were driven down out of control. Three German observation balloons were shot down in flames.

Ten of our machines are missing.

Continuous rains throughout the night prevented bombing operations.

JULY 24th, 7.38 p.m.—On the 23rd instant little flying was possible owing to wind and rain.

JULY 25th, 7.40 p.m.—On the 24th inst. there was still a very strong west wind blowing, and the weather mainly overcast. Towards evening the sky cleared, and a certain amount of sharp fighting and bombing took place.

Fifteen hostile machines were brought down and three driven down out of control.

Three of our machines are missing.

During the night over 24 tons of bombs were dropped by us on the railways at Valenciennes, Seclin, Courtrai, and Armentières, and on hostile billets on different parts of the front.

Two trains were hit with bombs, and thousands of rounds fired from machine-guns at various ground targets, including active anti-aircraft guns, searchlights, and transport.

All machines returned.

One of the enemy's night-bombing machines was brought down in our lines by anti-aircraft gunfire.

July 26th, 7.50 p.m.—On the 25th inst. the high wind still continued, but visibility was better than on previous days.

A certain amount of work in conjunction with the artillery was done, and many reconnaissances and the usual bombing carried out by our aeroplanes. Amongst the targets attacked were three large ammunition dumps, the docks at Bruges, and numerous villages used as billets by the enemy's troops.

In air fighting the strong west wind greatly favoured the enemy. In spite of this, 25 hostile machines were brought down by us and six others were driven down out of control. A hostile balloon was shot down in flames.

Fifteen of our machines are missing.

After dark, our night-bombing machines again attacked the railways at Courtrai and Seclin, and dropped over 300 bombs on rest billets.

All our machines returned.

One of the enemy's night-flying aeroplanes was shot down by anti-aircraft gun fire behind our lines.

July 27th, 7.43 p.m.—On the 26th inst., during the short period of the day in which flying was possible, three enemy machines were brought down by our aviators, and a hostile balloon was shot down in flames.

Two of our machines are missing.

One of our machines reported as missing on the 25th inst. has since been located.

July 28th, 7.28 p.m.—On the 26th (? 27th) inst. low clouds and rain prevented flying by day.

During the night bombs were dropped on hostile billets and huts-ments in the vicinity of Bapaume.

July 29th, 7.37 p.m.—On the 28th instant, in spite of low clouds, our aeroplanes were able to carry out several reconnaissances and take many photographs. Ten tons of bombs were distributed between ammunition dumps, railway stations, and billets in the neighbourhood of Douai, Armentières, Bapaume, and Chaulnes.

In the early morning there was a certain amount of fighting in the air. Nine hostile machines were brought down and two hostile balloons shot down in flames.

Four of our machines are missing.

During the night Bapaume and active hostile batteries north of the Somme were bombed, all our machines returning.

War Office Communiqués.

July 29th.—The G.O.C. Palestine reports:—

Since July 18th five enemy aeroplanes have been destroyed in aerial combats, and on the 25th extensive bombing raids were carried out against the enemy camps about Amman (on the Hedjaz Railway) and Shunet Nimrin (on the road from the Jordan to Amman).

July 29th.—The G.O.C. Italy reports:—

The weather, owing to frequent and heavy thunderstorms, has been on the whole unfavourable for flying. Since July 21st the Royal Air Force have destroyed six enemy aircraft.

Two of our machines have failed to return.

AIR FORCE.

Air Ministry Communiqués.

The following dispatches have been received from the Headquarters of the Royal Air Force, Independent Force, in France:—

July 23rd.—In a raid carried out on the afternoon of the 22nd inst. the main station of Offenburg was hit, and bursts were seen on the sidings. One hostile machine was destroyed.

All our machines returned.

On the night of July 22nd-23rd repeated attacks, attended with good results, were carried on against the enemy's aerodromes. Fires and explosions were observed.

Other targets were engaged with bombs and machine-gun fire.

July 26th.—On the night of July 25th-26th successful attacks were carried out on the station and factory at Pforzheim (in Baden, north-west of Stuttgart), the factory at Baalon (25 miles north of Verdun), and the station at Offenburg. Two fires broke out at Offenburg.

Four hostile aerodromes were bombed and attacked with machine-gun fire, and hangars were hit. Trains, anti-aircraft batteries, search-lights, and other ground targets were fired upon with machine-guns.

All our machines returned.

THE CASUALTY LIST.

MILITARY.

Reported July 24th.

Previously reported Missing, now reported Died of Wounds as Prisoners in German Hands.—Butler, Sec. Lt. J. O., R.F.C.
Grose, Sec. Lt. A. G., R.F.C
Miller, Sec. Lt. G., R.F.C.

Canadian Force.—Accidentally Killed.—Bannister, Lt. H. S., Alta R., attd. R.A.F.
Tunstall, Lt. G. S., Man R., attd. R.A.F.

Died.—Ferguson, Lt. W. B., M.C., Can. Rly. Troops, attd. R.A.F.

Wounded.—Denman, Lt. O., E. Ont. R., attd. R.A.F.

Missing.—Blight, Lt. T. F., Man. R., attd. R.A.F.; Claydon, Lt. A., Can. F.A., attd. R.A.F.

Previously reported Missing, now reported Prisoner in German Hands.—Hall, Lt. C. R., Que. R., attd. R.A.F.

Reported July 25th.

Previously reported Prisoner, now reported Killed.—Payne, Sec. Lt. H. A., R.F.C.

Reported July 26th.

Previously reported Prisoner, now reported Wounded and Prisoner in German Hands.—Birley, Lt. T. E. H., R.F.C.

Indian Forces.—Previously reported Missing, now reported Died as Prisoner in Turkish Hands.—McConnell, Lt. H. L. C., I.A.R.O., attd. R.F.C.

Reported July 29th.

Australian Force.—Died.—Hawke, Sec. Lt. S., F.C.

Canadian Force.—Previously reported Missing, now reported by German Government Killed or Died of Wounds.—Foley, Lt. R. G., M.C., E. Ont. R., attd. R.A.F.

Accidentally Killed.—Swannell, Lt. C. E., M.M., Man. R., attd. R.A.F.

Died.—Quinan, Capt. B. C., Sask. R., attd. R.A.F.

Wounded.—Perry, Lt. W. G., Que. R., attd. R.A.F.

Missing.—Mackie, Lt. J. M., Man. Regt., attd. R.A.F.

Reported July 30th.

Previously reported Missing, now reported Killed.—Fitzmaurice, Sec. Lt. A. H., R.F.C.
McCudden, Sec. Lt. J. A., M.C., R.F.C.
Oliver, Sec. Lt. F. L., Som. L.I., attd. R.F.C

Previously reported Missing, now reported Prisoner in German Hands.—Pope, Lt. A. D., R.F.C.

* * * *

The following officer, who was a prisoner in Germany, has now arrived in England:—

Wilson, Lt. C. B., M.C., Hussars, attd. R.F.C.

Casualties Among Wt. Os., N.C.Os., and Men.

The Dates are those of the Official List.

Australian Imperial Force.

Died.

July 20th.—F.C.—Banks-Smith, 2884 S. H.

AIR FORCE.

Reported July 25th.

Killed.—Caudell, Lt. J. H., R.A.F.
Edwards, Sec. Lt. R. S., R.A.F.
Grimshaw, Sec. Lt. G. H., R.A.F.
Moore, Lt. J. G., Rif. Brig. and R.A.F.
Robinson, Sec. Lt. T. V., R.A.F.
Souter, Sec. Lt. T. H., R.A.F.

Died of Wounds.—Jones, Lt. D. B., R.A.F.

Wounded.—Clarke, Sec. Lt. H. W., R.A.F.; Crossley, Lt. F. S., R.A.F.; Jones, Sec. Lt. S. H. F., R.A.F.; Macdonald, Sec. Lt. H. O., R.A.F.; MacPherson, Lt. K. D., R.A.F.; Riggs, Sec. Lt. T. H. R., Linc. R., attd. R.A.F.; Watson, Sec. Lt. H. H., R.A.F.

Missing.—Burry, Sec. Lt. H. W., R.A.F.; Chubb, Lt. J. A., R.A.F.; Gordon, Lt. H. A., R.A.F.; Hunter, Lt. D. Y., R.A.F.; Reynolds, Sec. Lt. E. G., R.A.F.; Scrivener, Sec. Lt. H. K., R.A.F.

Reported July 26th.

Killed.—Clarkson, Sec. Lt. T. C., R.A.F.
Elliott, Lt. H. J., R.A.F.
Oakley, Lt. M. F., R.A.F.
Pierce, Lt. R. G., R.A.F.
Prior, Sec. Lt. H. L., R. Fus., attd. R.A.F.
Smith, Sec. Lt. J. H., Middx. R. (T.F.), attd. R.A.F.

Died of Wounds.—McCudden, Maj. J. B., V.C., D.S.O., M.C., R.A.F.

Died.—Gibson, Sec. Lt. D. P., R.A.F.
Heywood, Lt. A., R.A.F.
Sutton, Sec. Lt. A. E. B., King's (L'pool R.), attd. R.A.F.

Wounded.—Costello, P/F/O W. J., R.A.F.; Gonyou, Capt. L. H., R.A.F.; Gowing, Lt. E. E., R.A.F.; Hyndman, P/F/O E. B., R.A.F.; Johnstone, P/F/O J. M., R.A.F.; McClure, Lt. I. H., R.A.F.; McCormick, Lt. H. A., R.A.F.; MacDonald, Sec. Lt. A. G., R.A.F.; Matthews, Sec. Lt. H. S., R.A.F.; Russell, Lt. F. S., R.A.F.; Thornton, P/F/O S. H., R.A.F.; Walters, P/F/O L., R.A.F.; Whiteley, Lt. R. I., R.A.F.

Missing.—Briggs, Lt. C., R.A.F.; Hall, Lt. K. W. J., R.A.F.; McConnell, Lt. H. J. R. Ir. Rif., R.A.F.; Tempest, Sec. Lt. W. C., R.A.F.; Warner, Sec. Lt. W. H., R.A.F.

Prisoners.—Bensley, Lt. E. F., R.A.F.; Peers, Lt. J. A., R.A.F.

Previously reported Missing, now reported Prisoner.—Hamilton, Sec. Lt. G., R.A.F.

Interned.—Barker, Capt. E. R., R.A.F.
Hudson, Lt. F. H., R.A.F.
Kinmond, Sec. Lt. D. C., R.A.F.

Previously reported Missing, now reported Wounded and Prisoner.—Chadwick, Capt. G., Manch. R. (T.F.), attd. R.A.F.

Reported July 27th.

Killed.—Colbourne, Sec. Lt. J. L., R.A.F.
Felhauser, Sec. Lt. C. V., R.A.F.
Handel, Sec. Lt. K. D., R.A.F.
Howson, Lt. C. J., King's (L/pool) R. and R.A.F.
Maden, Capt. F., R.A.F.
Nicholls-Pratt, Sec. Lt. G., R.A.F.
Whitfield, Lt. N. B., Yeomanry and R.A.F.

Died of Wounds.—Scaramanga, Lt. J. J., R.A.F.

Wounded.—Anderson, Flt.-Sub-Lt. W. S., R.A.F.; Densham, P/F/O H. C., R.A.F.; Everitt, Lt. J. P., R.A.F.; Fellows, Sec. Lt. H., R.A.F.; Godfrey, Lt. A. L., R.A.F.; Hoskins, Lt. H. V. M., R.A.F.; Jeans, Lt. W. D., R.A.F.; Jenkins, Lt. N. H., R.A.F.; Robertson, Sec. Lt. D. B., R.A.F.; Sier, Sec. Lt. H. J., R.F.A. (S.R.), attd. R.F.A.; Spark, Sec. Lt. W. S., R.A.F.; Sherwin, Capt. C. E., R.E., Hamp. Fort., T.F., attd. R.A.F.

Missing.—Bird, Lt. B. A., K.R.R.C., attd. R.A.F.; Cowan, Sec. Lt. A. R., Res. Lancers, attd. R.A.F.; Horton, Capt. G. D., R.A.F.; Turner, Sec. Lt. W., R.A.F.

Reported July 29th.

Killed.—Frederick, Sec. Lt. L. M., R.A.F.
Meddings, Sec. Lt. W. W., R.A.F.
Morton, Sec. Lt. R. H., R.A.F.
Oram, Sec. Lt. W., R.A.F.
Pellow, Sec. Lt. R. C., R.A.F.
Winks, Sec. Lt. J. G., R.A.F.

Died of Wounds.—Holland, Sec. Lt. J. H., R. Fus., attd. R.A.F.

Drowned.—Hunter, Sec. Lt. W. A., R.A.F.

Wounded.—Arnold, Sec. Lt. F. T., R.A.F.; Booth, Sec. Lt. H., W. Yorks R., attd. R.A.F.; De Niverville, Lt. A., R.A.F.; Hammond, Sec. Lt. J. E., R.A.F.; Hardwick, Lt. G. N., R.A.F.; Marshall, Sec. Lt. W. S., R.A.F.; Moffatt, Sec. Lt. I. McL., R.G.A., attd. R.A.F.; Simpson, Lt. A. E., R.A.F.

Missing.—Battle, Lt. A. J., R.A.F.; Dickinson, Lt. H. M., R.A.F.; Dunn, Sec. Lt. R. H., R.A.F.; Hinchliffe, Sec. Lt. H. E., Manch. R., attd. R.A.F.; Kane, Lt. M. H. K., M.C., R. Dub. Fus., attd. R.A.F.; Loupinsky, Lt. J., R.A.F.; McFaul, Lt. L., R.A.F.; Ridley, Lt. C. B., R.A.F.

Reported July 31st.

Killed.—Bullock, Lt. G. E., N. Staffs. R., attd. R.A.F.
Claye, Lt. C. G., Sher. For., attd. R.A.F.
Dowsett, Sec. Lt. H. G., R.A.F.
Gabell, Capt. D. R. C., Glos. R. and R.A.F.
Higgins, Sec. Lt. H., R.A.F.
Lanigan, Sec. Lt. W. L., R.A.F.
Peacock, Sec. Lt. J. T., Durh. L.I. and R.A.F.

Died of Wounds.—Critchley, Sec. Lt. B., R.A.F.
Ealand, Sec. Lt. A. N., R.A.F.

Wounded.—Bremner, Lt. C. D., Yeomanry and R.A.F.; Connell, Sec. Lt. R. F., R.A.F.; Haycock, Capt. H., R.A.F.; Landon, Lt.-Col. J. H. A., D.S.O., R.A.F.; Lange, Lt. O. J., R.A.F.; Sweetman, Sec. Lt. C., R.A.F., Townend, Sec. Lt. H. C. H., R.A.F.; Wetherell, Capt. R. H., Northd. Fus. and R.A.F.

Missing.—Body, Lt. G. C., R.A.F.; Cobden, Lt. F. P., R.A.F.; Ducray, Lt. M. J., R.A.F.; Graham, Sec. Lt. G. W., R.A.F.; McConchie, Lt. T. L., R.A.F.; Moore, Lt. A., R.A.F.; Norden, Sec. Lt. W. G., R.E. and R.A.F.; Wildig, Sec. Lt. N. H., R.A.F.; Woodman, Sec. Lt. K. C. B., R.A.F.

Previously reported Missing, now reported Prisoner of War.—Cowan, Lt. W. E., R.A.F.

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Previously reported believed Prisoners of War, now reported Prisoners of War.—Birch, Lt. S., R.A.F.; Bollins, Sec. Lt. A. V., King's (Lpool R.), attd. R.A.F.; Hillyard, Sec. Lt. V. W. H., R.A.F.

Casualties among Wt. O., N.C.Os. and Men of the R.A.F.

The Dates are those of the Official List:

Killed.

July 25th.—Boyles 235047 Boy Mech. H. (London); Bugden 212191 1st A.A/M E. F. (Putney); Suthurst 12793 1st A/M F. (Norden).

July 26th.—Holmes 38873 1st A/M A. E. (St. David's, Exeter).

Died of Wounds.

July 25th.—Johnson Casements 44839 A/M J. (Manchester); James 208399 1st A.A/M S. W. (Poplar); Langbeck 93528 3rd A/M H. M. A. (Sheffield).

Died.

July 25th.—Amos 44934 2nd A/M G. F. (Long Eaton); Booth, 3653 Serjt.-Maj. J. (Inkeston); Braddy 404121 2nd A/M W. F. (Catford).

July 26th.—Hill 80490 3rd A/M C. (Old Hill, Staffs); Jennings 134796 Serjt.-Mech. W. (Redfield, Bristol); Lockerby 95269 3rd A/M J. A. (St. Pancras, London).

Drowned.

July 23rd.—James 207704 A/A/M E. R. T. (Wandsworth).

July 25th.—Canham 5366 1st A/M L. R. (Branston); Pollard 85214 3rd A/M H. J. (Bingley).

Wounded.

July 25th.—Bourne 228309 2nd A/M S. E. (Earlsfield, S.W.); Bowman J15374 Cpl. W. (Hull); Briggs K3607 1st Pte. S. F. (Brighton); Bunting 103144 2nd A/M R. (Reading); Dale F35066 A/G H. (Barton); Farley 214348 1/Pte. E. (Watford); Hickling 206871 Cpl. J. W. (Nottingham); Horton 204465 1st A/M J. (Dover); Metcalfe 241662 2nd Pte. W. H. (London); Ratnage 213644 1st A/M C. W. (Walthamstow); Smallman 218505 1st A/M F. A. (Bickenham); Snelling 44567 2nd A/M C. R. (Walthamstow).

July 26th.—Abrahams 9150 1st A/M E. (Avondale Sq., London, S.E.); Shepherd 23728 Flt. Serjt. W. H. (Clapham Road, London, S.W.); Slater 12365 Cpl. A. B. (Canonbury, N.).

Missing.

July 23rd.—Chase 213914 2nd A/M H. F. (Leyton, Essex); Grant 211338 1st A/M F. (Croydon); Waller 219287 Pte. I. J. G. (Clapton, N.E.).

July 25th.—Locke 207344 2nd A/M L. H. (Fulham).

July 26th.—Claydon 235086 1st Pte. H. A. (Grays, Essex); Ward 239875 Serjt. J. T. (Sheffield).

Missing, believed Drowned.

July 23rd.—Beadle 986 Serjt. W. J. (East Grinstead); Bishop 231033 Boy Mech. S. S. (London, W.13); Cranmore 230079 2nd A/M J. M. (Birmingham); Hodgeson 203834 Serjt. H. (Dunbar, near Edinburgh); Hudson 225266 2nd A/M V. H. (Derby); Page 215439 2nd A/M A. H. (Dalston, London, N.E.); Printer M2687 C/P.O. C. W (Gloucester); Robinson 213503 2nd A/M A. W. (Dartford).

July.—Pike 214061 2nd A/M A. L. (Reading).

Previously reported Missing, now reported believed Wounded and Prisoner of War.

July 26th.—Spencer 211713 A/M F. (Nottingham).

Previously reported Missing, now reported Missing, believed Prisoner of War.

July 26th.—Costen 211854 A/M C. F. (Gillingham, Kent); O'Neill 236154 Serjt. W. (Dublin).

Prisoner of War.

July 26th.—Armstrong F23708 A/M R. B. (Barbados, W.I.).

Interned.

July 23rd.—Brown 219568 2nd A/M A. J. (Islington, N.); Burton 209792 2nd A/M E. P. C. (Wandsworth); Russell 234877 Boy Mech. A. C. H. (Downend, near Bristol); Strevens 207661 1st A/M E. J. (Patters Crouch, near St. Albans).

Accidentally Injured.

July 25th.—Keillor 9064 1st A/M H. (Arbroath); Knight 39093 2nd A/M B. J. (Birmingham); McGhee 403994 1st A/M J. (Greenock); Marshall 22795 1st A/M W. T. (Bethnal Green); Mercer 229963 1st A/M A. E (Dorking).

PERSONAL NOTICES.

NAVAL.

Deaths.

ARMSTRONG.—Lt. George Powell Armstrong, R.A.F., late R.N.A.S., died of injuries received whilst flying on July 15th. He was the elder son of Mr. and Mrs. Thomas Armstrong, Toronto, Canada, and husband of May Armstrong. He was 23 years of age.

CLEMENCE.—Lt. Lionel Theodore Clemence, R.A.F. (late R.N.A.S.), who died on July 27th, at Bryn-y-Mor, Camborne, Cornwall, from illness contracted on active service, was the younger son of Herbert and Carrie Clemence, of 6, Beaumont Mansions, West Kensington. He was 19 years of age.

DALLAS.—Major Roderic Stanley Dallas, D.S.O., D.S.C. (and bar), R.A.F. (late R.N.A.S.) whose death was announced recently, was the son of Mr. Dallas, of Taranga, Queensland, Australia. At the beginning of the war he obtained a commission in the Australian Army, and afterwards obtained permission to take up flying. Joining the R.N.A.S. on June 25th, 1915, he quickly became an efficient pilot, and proceeded on active service to the Belgian coast at the end of November of that year. As a scout pilot he was with the R.N.A.S. squadrons which co-operated with the French at Verdun, and afterwards with the R.N.A.S. squadrons attached to the Army on the Somme. He gained the D.S.C. and the Croix de Guerre for his work on the Belgian coast and with the French, and the bar to the D.S.C. whilst attached to the Army. He was also awarded the D.S.O., and was several times mentioned in dispatches. Major Dallas was officially credited with having destroyed 39 enemy machines, more than half of which were destroyed by him while he was in command of an R.N.A.S. squadron.

LITTLE.—Capt. Robert Alexander Little, D.S.O. (and bar), D.S.C. (and bar), R.A.F. (late R.N.A.S.), who was recently killed abroad in an aerial combat at night, was the son of Mr. R. Little, 263, College Street, Melbourne, Australia. He joined the R.N.A.S. in January, 1916, and proceeded on active service on the Belgian coast in June of that year. Afterwards he went with the R.N.A.S. squadrons co-operating with the Army on the Somme, and soon established himself as a fearless fighting pilot. He was officially credited with having destroyed 47 enemy machines, and was awarded the D.S.O. (and bar), D.S.C. (and bar), and the Croix de Guerre. At the time of his death he held the record among pilots of the late R.N.A.S. for enemy machines destroyed. His entire lack of fear was well evidenced at Dover immediately before crossing to France. An R.F.C. pilot flew into Dover cliffs on a foggy day and crashed. Captain Little scaled down the cliffs and rescued the pilot. He was 22 years old.

SMITH.—Lt. Frederick Charles Smith, R.A.F., was killed on July 22nd, aged 22. He was educated at Borlase School, Marlow, and joined the R.N.V.R. on August 5th, 1914. He went with the Royal Naval Brigade to Antwerp, was present with the Royal Naval Division (Drake Battalion) in the second day's landing at Gallipoli, and served through that campaign as a machine gunner. He afterwards served in a patrol vessel and mine-sweeper as an A.B., taking part in many rescues of torpedoed crews and in salving boats. For these services he was specially thanked and promoted sub-lieutenant in the R.N.A.S. in June, 1917, and as such acquired considerable skill in bomb dropping and aerial gunnery. This year he was posted to the British Ægean Squadron and was promoted lieutenant.

Marriages.

BRIGGS—LONG.—The wedding took place on Saturday, July 27th, at St. Michael-le-Belfrey, York, at 2.30 p.m., of Col. E. Featherstone Briggs, D.S.O., R.A.F. (late Wing-Comdr., R.N.), with Violet, daughter of Mrs. Ernest Long, of 35, St. Saviour's Gate, York.

HOLMAN—BROWN.—On July 25th, at St. Nicholas Church, Great Yarmouth, Surgeon Alec. G. Holman, R.N., attd. R.A.F., second son of the late Frank Holman and Mrs. Holman, of The Manor House, Westbury-on-Trym, was married to Grace Kathleen, fifth daughter of the late Charles N. Brown and Mrs. Brown, The Elms, Southtown, Great Yarmouth, by the Ven. Archdeacon Lisle Carr.

Engagements.

GROVES—GLYN.—A marriage has been arranged and will shortly take place between Brig.-Gen. P. R. C. Groves, D.S.O., R.A.F., elder son of J. Groves, late of the Public Works Department, India, and Margot, elder daughter of late Clayton Glyn, of Durrington House, Harlow, and Mrs. Glyn.

KERSHAW—MARSHALL.—An engagement is announced between Ronald H. Kershaw, Maj., R.A.F. (late Squadron-Commander, R.N.A.S.), son of the late Staff-Surgeon E. E. Kershaw, R.N., and Mrs. Selby Hall, and Iris Clare, second daughter of Mr. and Mrs. J. F. Marshall, of Seacourt, Hayling Island, Hants.

Birth.

HAVERS.—On July 26th, at Hestercombe, West Worthing, to Rosabel Winifred, wife of Capt. John W. Havers, R.A.F. (late Lt., R.N.)—a son.

MILITARY.

Deaths.

AUSTIN-SPARKS.—Col. Ralph Harold Austin-Sparks, R.A.F., was accidentally killed on July 25th whilst flying. A memorial service will be held on Thursday, August 1st, at Whyteleafe Parish Church.

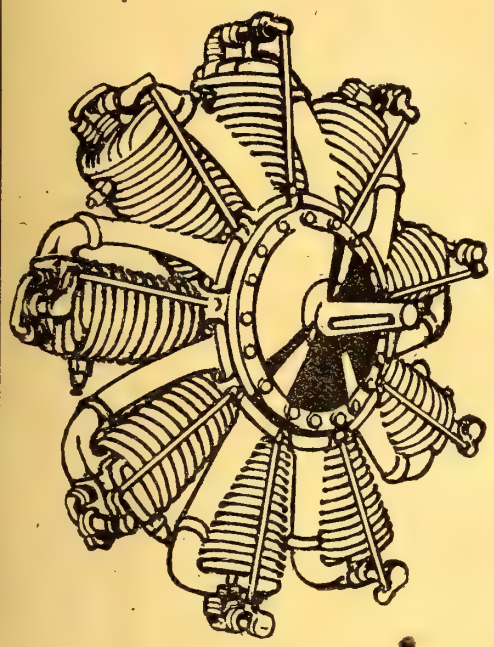
BEACHCROFT.—Lt. W. F. Beachcroft, M.C., R.A.F., who was killed in an aeroplane accident on July 21st, was the only son of Mr. and Mrs. Beachcroft, of Natal, S. Africa.

BRAY.—Sec. Lt. Horace Edgar Bray, R.A.F., who was accidentally killed in England on July 9th in a collision in the air, was the younger son of the Rev. H. E. Bray, Rector of St. John's Church, Thamesford, Ontario. He was educated at the Collegiate Institute, Galt, Ontario, and enlisted early in 1915, at the age of 18. He served with the Canadian Light Horse until wounded at the Battle of the Somme in September, 1916. He received his commission in the R.F.C. in December, 1917, and was on the point of completing his training as a scout pilot when his unfortunate accident occurred.

BULLOCK.—Lt. Geoffrey Ernest Bullock, North Staffs. Regt. and R.A.F., who was killed in action on July 16th, was the elder son of C. E. Bullock, of Barlaston, Stoke-on-Trent. He was 22 years of age.

COLLINGWOOD.—Lt. Richard Milne Collingwood, R.A.F., who was accidentally killed in England on July 19th, in a collision in mid-air, aged 21, was the son of Capt. W. A. Collingwood, R.E. He was educated at St. Bees School, Cumberland, and, on leaving, joined the Border Regt. as second lieutenant in Dec., 1914. He went to the front in Jan., 1916, and became attached to the Royal Flying Corps as an observer for about a year. Returning to England, he qualified as a pilot in June, 1917, and for some time he had acted as an instructor. He was, in fact, carrying out those duties when the accident happened which caused his death.

FITZMAURICE.—Lt. Archibald Hamilton Fitzmaurice, R.F.C., formerly Sec. Lt. 16th Lancers and Somali Camel Corps, who has been killed, was the second son of Maj. D. C. M. Fitz-



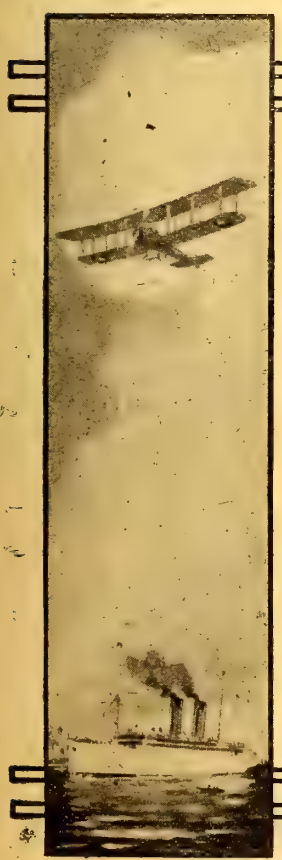
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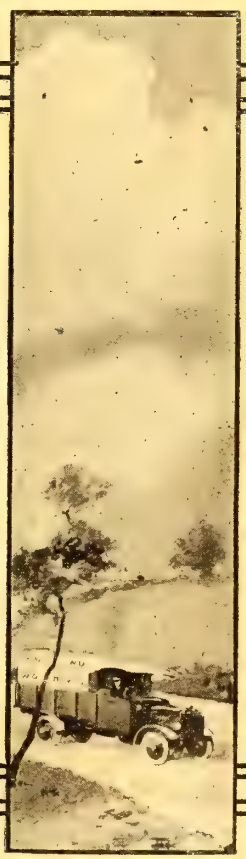
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maurice, Lancashire Fusiliers, and grandson of the late Honourable F. O. B. Fitzmaurice, Commdr. R.N., and Mrs. Macintosh, Fordlands, Newton Abbot. He was reported "missing," last seen in combat with four enemy aircraft on March 12th, and is now reported killed in action in France on that date. He was 23 years of age.

FOSTER.—Capt. W. L. G. Foster, A.S.C., attd. S. Wales Bord., who was killed on July 2nd, joined the University and Public School Corps in September, 1914, and received his commission in the A.S.C. in January, 1915. Owing to his good work in organising he was recommended for his captaincy, which he received in May, 1915. In July of that year he went to the front from a Divisional Train, where he remained until he volunteered for the R.F.C. After nine months' flying, however, he had to give up owing to ill-health. He then transferred to the South Wales Borderers, and took command of a company, in which position he made himself very popular with his men and fellow officers. In January, 1917, his battalion was disbanded, but he took up the command of a company in another battalion. In June he and several officers and men were down with trench fever in a village which was being shelled by the enemy. He and another officer went out to assist the wounded and both were killed.

QUINAN.—Capt. Barrington Chadwick Quinan, Canadians, attd. R.A.F., who died suddenly of pneumonia at Machull, Liverpool, was the youngest son of Mrs. W. L. Chadwick, Newlands, Glasgow.

RAYNER.—Lt. Herbert Stanley Rayner, R.A.F., who was killed while flying on active service at the front on July 15th, was the only son of Lt. Alfred D. and Martha Rayner (*née* Southworth), both late of Clitheroe, but now of Linkhurst, Stonegate, Sussex. He was 28 years of age on the day of his death. Soon after the outbreak of war he joined the Kent Cycle Corps, and obtained his commission in June, 1915. He was posted to a battalion of the Northamptonshire Regt., and in 1916 was transferred to another battalion of the same regiment in France, where he took part in nearly all the great battles in which the regiment was engaged during the Somme offensive. He afterwards became attached R.A.F. and in turn became observer and pilot. He was wounded in May, 1917, and later became a flying instructor in England, and only returned to the front five weeks before meeting his death. He was educated at the Old Forest School, Walthamstow, and in France.

MARRIAGE.

KENNEDY-COCHRAN-PATRICK—GROSS.—On July 27th, at St. Mark's, North Audley Street, by the Rev. W. A. Pennyman, Maj. C. Kennedy-Cochran-Patrick, D.S.O., M.C., R.A.F., to Ella, daughter of Mrs. Sydney Gross, 55, Green Street, Park Lane.

ENGAGEMENTS.

BRYANT—FISHER.—An engagement is announced between Capt. Walter E. G. Bryant, R. Fus., attd. R.A.F., eldest son of Mr. and Mrs. W. E. Bryant, of Streatham Common, and Miss Elsie Juanita Fisher, younger daughter of Mr. and Mrs. Fisher, of Blundellsands, and Willaston, Chester.

BUNBURY—MURRAY.—The marriage arranged between Capt. H. W. Bunbury, Suffolk Regt. and R.A.F., and Miss Margaret Murray, will take place at St James's Church, Piccadilly, on Saturday, August 24th, at 2.30. All friends will be welcome at the church.

PARK—PARISH.—An engagement is announced between Maj. Keith R. Park, M.C., C. de G., R.F.A. and R.A.F., son of Professor J. L. Park, F.G.S., B.Sc., of Aberdeen and New Zealand, and Dorothy Margarita, daughter of Maj. and Mrs. Woodbine Parish, of 2, Stanhope Street, Hyde Park.

* * *

Sec. Lt. George Gornall, R.F.C., and his observer, Sec. Lt. Steele, R.F.C., have been missing since March 27th. If anyone writing to prisoners of war in Germany would ask for information, the same would be gratefully received by Mr. and Mrs. Gornall, of Brookfield, Heaton, Bolton, Lancs.

AIR FORCE.

DEATHS.

BERRY.—Sec. Lt. Charles Frank Berry, R.A.F., who was killed in action on the night of July 17th, was the son of R. and A. Berry, of 75, Nelgarde Road, Catford.

DAVIDSON and GORMAN.—While flying on July 27th Lt. R. J. Davidson, R.A.F., and Lt. B. G. Gorman, R.A.F., were killed through their machines colliding at a comparatively low level.

DOWSETT.—Sec. Lt. Henry George Dowsett, R.A.F., who was killed through an aeroplane accident whilst flying on July 17th, was the younger son of Mrs. Dowsett, 31, Rathgar Avenue, Ealing. He was 24 years of age.

MACLEOD, MILES and JENNINGS.—On July 24th Capt. Malcolm McKay MacLeod, R.A.F., aged 23, Sec Lt. William Norman Miles, R.A.F., aged 24, and Cadet Robert Jennings, R.A.F., aged 21, were killed while flying in South Lincolnshire. The two machines collided and crashed to the ground, the three occupants being killed almost instantaneously.

ENGAGEMENTS.

FAIRFAX—IRWIN.—The engagement is announced of Lt. James Charles Fairfax, R.A.F., of Milton Road, Hanwell, and Miss Mildred Collett Irwin, of Fowler's Walk, Ealing.

HAMMERSLEY-HEENAN—ROBINSON.—The engagement is announced between Capt. John Hammersley-Heenan, R.A.F., eldest son of Mr. and Mrs. R. H. Hammersley-Heenan, of Hampstead, and Linley, youngest daughter of Mr. and Mrs. Sydney Jessop Robinson, of Sheffield.

MURDOCH—MACCARTHY.—The engagement is announced of Lt. Douglas M. Murdoch, R.A.F., younger son of Mr. H. G. Murdoch, of Plympton, S. Devon, and Margaret Amy, daughter of Mr. and Mrs. H. I. MacCarthy, of Bothwell, Tasmania.

PEARSE—SIMPKIN.—The engagement is announced of Lt. Harold Pearse, R.A.F., son of the late Walter Pearse, and of Mrs. Pearse, of Newcastle-on-Tyne, and Gwendoline Gertrude Allen, younger daughter of Mr. and Mrs. Allen Simpkin, of Endcliffe Cottage, Sheffield.

STORMONT—HAZELL.—A marriage has been arranged, and will take place at the beginning of Sept., leave permitting, between Capt. William Stormont, R.A.F., and Betty, youngest daughter of the late William Hazell and Mrs. Hazell, Broughty Ferry, Scotland.

WILLIAMSON—JOHNSEN.—The engagement is announced of Capt. Guy Ernest Williamson, R.A.F., second son of Mr. and Mrs. S. T. Williamson, of Beechcroft, Chislehurst, and Gladys Nathalie, second daughter of Mr. and Mrs. W. M. Johnsen, of Barnfield, Bromley, Kent.

WYNNE-WILLIAMS—BARNARD.—The engagement is announced between Jack G. Wynne-Williams, R.A.F., eldest son of Mr. and Mrs. Wynne-Williams, of Bodwyn, Carnarvon, North Wales, and Yvonne, only daughter of the late Frank Stewart Barnard and Mrs. Barnard, of The Wilderness, Earley, Berks, and Bryn Brass Castle, North Wales.

MARRIAGES.

BOOTH—WINGFIELD.—On Monday, July 22nd, at St. Nicholas Church, Guildford, Mr. W. H. St. V. Booth, Air Mech., R.A.F., was married to Miss Gladys V. L. Wingfield, granddaughter of the late R. R. Wingfield, Esq., J.P., D.C.L., by the Rev. H. Hole.

HELLYAR—CHAPPLE.—On July 27th, at St. Saviour's Church, Brixton Hill, Lt. William Frank Hellyar, R.A.F., only son of Mr. and Mrs. William J. Helyar, of Cavendish Road, Clapham Common, was married to "Dolly," second daughter of Mr. and Mrs. Henry W. Chapple, of "Suffiabad," Bonham Road, Brixton Hill.

HOWARD-JONES—MARKHAM.—On July 17th, at St. Peter's Church, Harrogate, Lt. Arthur Knowles Howard-Jones, R.A.F., elder son of Dr. and Mrs. Arthur Jones, The Hollies, Hokesby, Middlesbrough, was married to Agnes Louise, daughter of Mrs. E. Markham and the late T. J. Markham, of Holland Park, London, W., by the Rev. Gerald Richardson.

MELITUS—EVANS.—On July 27th, at St. Ambrose Church, Bournemouth, Lt. P N. Melitus, R.A.F., elder son of Mr. Harry Melitus, of 46, Holland Park, W., was married to Hebe Madge, eldest daughter of the late Mr. B. B. Evans, J.P., of "Fair Elms," Hatch End, Middlesex, and Mrs. Evans, Craigalea, Alum Chine, Bournemouth.

BIRTHS.

BEVAN.—On July 22nd, at "Granshaw," Jesmond, Newcastle-on-Tyne, the wife of Capt. E. St. G. Bevan, R.A.F., of a daughter.

COLMAN.—On July 24th, at Andover, Ena Heseltine, the wife of Lt. E. C. Colman, R.A.F., of a son (Edward Derek Heseltine).

GARDINER.—On July 25th, at The Gables, Woolton, Liverpool, to Capt. and Mrs. James Gardiner, R.A.F.—a daughter.

LINDNER.—On July 25th, at 59, Sandon Road, Edgbaston, to Stephanie, the wife of Lt. Philip E. Lindner, R.A.F., a daughter.

MILEY.—On July 27th, at Haven Hill, St. Mary Bourne, Andover, the wife of Maj. A. J. Miley, M.B.E., R.A.F., of a son.

FOREIGN COMMUNIQUES.

FRANCE.

July 24th.—During the day of July 22nd the work of our air service continued on the whole battle-front with great activity. The French and British crews fought numerous engagements, which cost the enemy heavy losses. Thirty-seven German aeroplanes were shot down or put out of action, 14 of them by British pilots. In addition four captive balloons were set on fire by French aviators.

Bombing operations were continued with the same method as on the preceding days and with equally good results. The enemy's points of concentration, encampments, and centres of communication were our particular targets, and 29 tons of projectiles were dropped on them. The British bombing planes, for their part, dropped 4½ tons of explosives on the aviation grounds and railway stations in the back area of the battlefield.

During the night of July 22nd-23rd, in spite of the rain and the cloudy weather, a successful raid was made on the railway station of Maison Bleue, and over 1¼ ton of projectiles dropped on the buildings and trains drawn up at this station started a great fire and a series of violent explosions.

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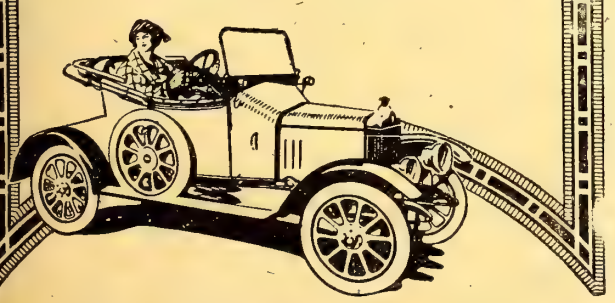
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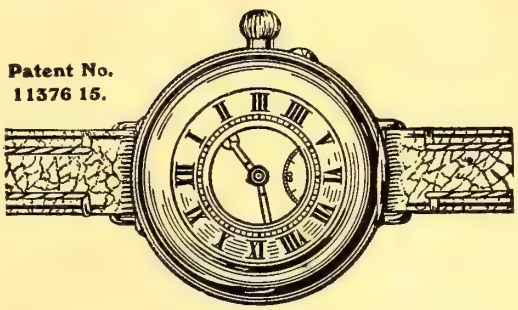
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in the expeditions of the last few days and has taken its share of the successes gained by our aerial forces.

The following are the latest officially confirmed successes:—

Sous Lt. Bourjade has set on fire four captive balloons, three of them on July 15th and the fourth on July 17th, bringing up to 13 the number of machines he has destroyed until that date.

Sous Lt. Nuville on July 15th brought down his 10th machine (nine aeroplanes and one captive balloon).

Lt. de Turenne brought down on July 15th and 16th his 10th and 11th aeroplanes.

Capt. Lahoulle, who destroyed three captive balloons on July 15th, has 10 machines officially confirmed to his credit (five captive balloons and five aeroplanes).

Sous Lt. Noques on July 17th gained his 10th victory (seven aeroplanes and three captive balloons).

Sous Lt. Corffard on July 18th brought down his 16th machine (11 captive balloons and five aeroplanes). This pilot brought down 13 machines in a month and half, seven of them in four days.

July 25th.—During the day of July 24th the French and British crews shot down nine German aeroplanes and set fire to three captive balloons.

In spite of the bad weather, our bombing planes carried out numerous expeditions against the rear zone of the battle. The railway station and depôts of Amifontaine, the railway stations and railway lines of Bazoches, Courlandon, Fismes, and Guigincourt were copiously bombed. Altogether 30 tons of projectiles were used with good results. Fires and big explosions were observed at Courlandon and Fismes.

Sous Lt. Cazale shot down on July 21st his tenth machine (nine aeroplanes and one Drachen), and Adjutant Bouyer shot down on July 19th two aeroplanes, bringing the number of machines credited to this Ace up to 10.

Army of the Orient.—Allied aviators bombarded enemy establishments north of Monastir and at Demirhissar.

July 26th.—During the day of July 25th seven enemy aeroplanes were shot down or forced to land by our Air Forces and 18 by the British Air Force acting in liaison with ours. We on our side dropped over 38 tons of projectiles by night and day on the railway stations, lines of communications, hangars, dumps, and parks of the rear zone of the battle. Fires and explosions were observed The British bombing planes carried out also several expeditions, and dropped four tons of projectiles on Bazoches, Fère-en-Tardenois, and Mt. Notre Dame.

Army of the Orient.—Allied aviators carried out numerous bombardments. One enemy aeroplane was brought down.

July 28th.—Adjudant Artigau on July 22nd brought down his 10th German aeroplane.

July 29th.—Army of the Orient.—In air fighting one enemy machine was brought down.

GERMANY.

July 23rd.—Fifty-two enemy aeroplanes and four captive balloons were shot down yesterday. Lt. Loewenhardt obtained his 42nd and 43rd aerial victory, Lt. Billik his 26th, Lt. Bolle his 25th, and Lt. Pippard his 20th and 21st.

July 26th.—In aerial combats yesterday the enemy lost 28 aeroplanes and one captive balloon.

Lt. Baron von Richthofen obtained his 30th, and, with it, Richthofen's Squadron its 500th aerial victory. Lt. Loewenhardt shot down his 44th aerial opponent, Lt. Billik his 26th, Lt. Bolle his 26th, and Serjt. Thom his 25th.

July 29th.—Lt. Loewenhardt obtained his 45th aerial victory.

ITALY.

July 23rd.—On July 21st military works and the anchorages at Cattaro and Antivari were again bombed with visibly good results and with no loss to ourselves. Two enemy machines detected on July 18th above Ancona were both brought down by our seaplanes. Two of the aviators were taken prisoner.

July 23rd.—In the Mori region. Our aeroplanes effectively bombarded the railway establishments of Mattarello (near Trent)

July 24th.—During the night of July 22nd-23rd an enemy plane, hit by the anti-aircraft artillery, fell well within our lines. During the day yesterday three other hostile machines were brought down in air fighting. Last night enemy aeroplanes dropping bombs on the back areas were attacked by our aviators, who brought down two of them over Treviso.

July 25th.—In air fighting two hostile aeroplanes were brought down.

July 26th.—A hostile aeroplane was brought down in air fighting.

During the morning of July 22nd and the following night a number of Italian aeroplanes dropped bombs on the enemy base at Durazzo. Steamers were hit, several depots were struck, and fires were observed. All the Italian aeroplanes returned undamaged, in spite of intense anti-aircraft fire.

Yesterday a number of aeroplanes attached to the British Navy again attacked the military works and harbour of Cattaro. Important damage was observed, especially in the aerodrome and in the submarine base.

To-day our naval aviators successfully bombarded the aerodrome at Lagosta, where a large fire was observed. We sustained no losses in the course of these operations, notwithstanding the enemy's intense anti-aircraft fire.

An enemy air raid against our coast between Porto Corsini (near Ravenna) and Rimini (farther to the south) carried out last night by the enemy resulted in no damage.

July 28th.—Two enemy aeroplanes were brought down in air fighting.

July 29th.—In air fighting two enemy aeroplanes were brought down A third was accounted for by the fire of anti-aircraft artillery.

U. S. A.

July 26th.—In the region of Verdilly one of our aviators shot down a hostile machine.

TURKEY.

July 24th.—Six enemy aviators dropped bombs on Constantinople on the afternoon of July 23rd.

July 27th.—On the Palestine coast sector to-day there was lively aerial activity.

Last night some enemy aeroplanes attempted to attack Constantinople, but were driven off by our defences. A few bombs were dropped without causing any damage.

BELGIUM.

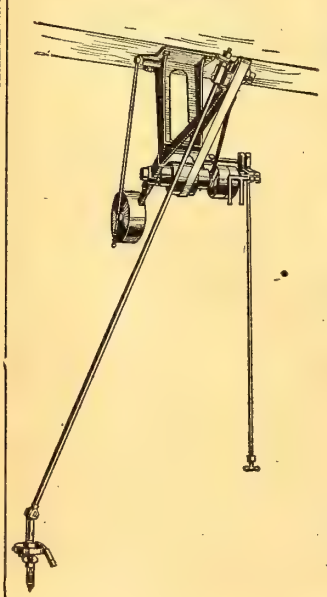
July 23rd.—On the night of July 21st-22nd enemy aviators dropped many bombs on our cantonments. Two of the machines, of the Gotha type, were brought down in our lines, one by our air defences.

Sous-Lt. Coppens brought down, on the morning of the 22nd, three balloons, which bring the number of his victories up to 20.

This morning one of our aviators brought down an enemy balloon near Zarren

July 25th.—Sous-Lt. Coppens brought down a captive balloon in flames over Zarren, thus achieving his 21st victory.

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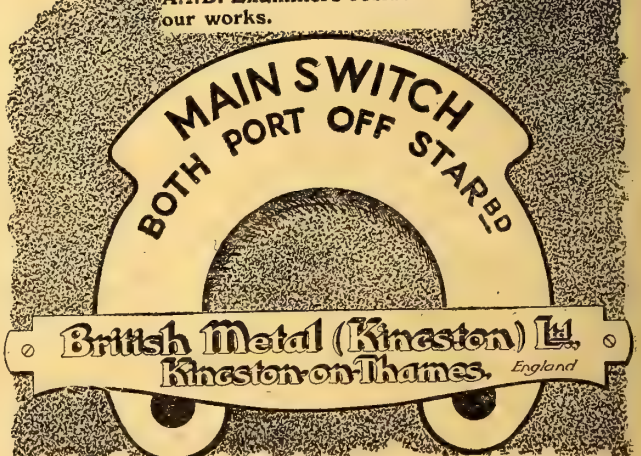
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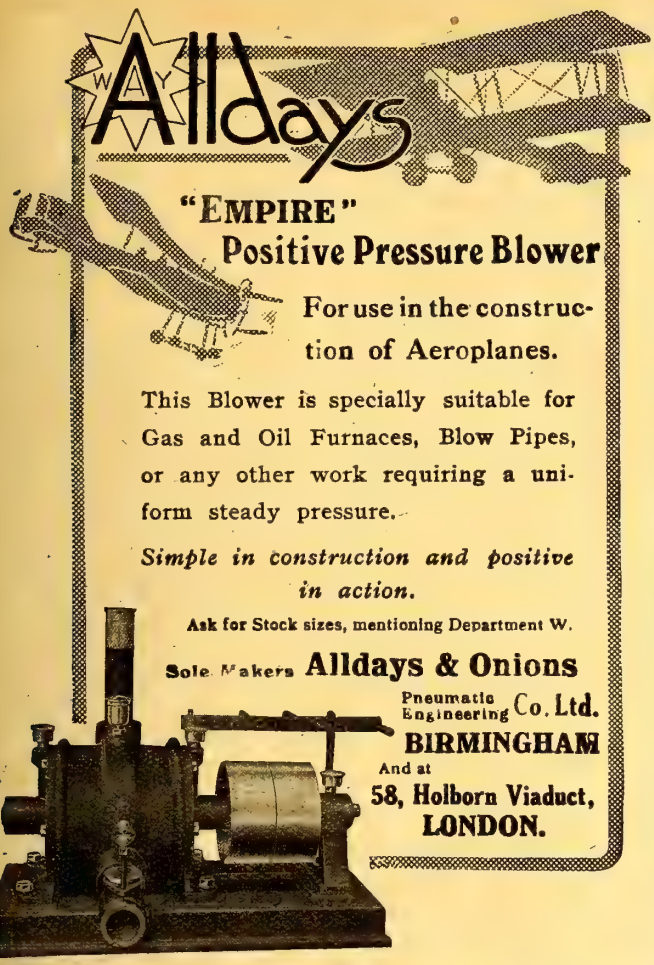
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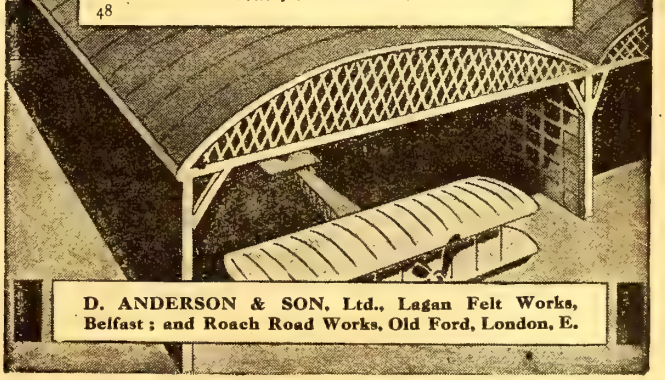
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THE WAR IN REVIEW.

Good Work at Fismes.

The "Times" correspondent, writing from Paris on July 28th, says with regard to the recent German retreat from the Marne:—

Aviators flying over the enemy's lines of communication along the Dormans—Fère road, the Château-Thierry—Fismes road, and the Dormans—Ville-en-Tardenois road, report that the whole German rear is in a state of the utmost confusion. The high road of Fismes was blocked by lorries and troops for 11 hours, and gave the bombing squadrons a magnificent target.

The nature of the havoc wrought by the French air squadrons is shown by the fact that between July 15th and 22nd along the battle-front over 182 tons of bombs were dropped in daylight operations and over 102 tons during night raids. In four days one group of aeroplanes alone dropped 15,000 bombs.

The activity of the Tanks has also contributed enormously to the French success. Each Tank section has an average of between 15 and 20 German machine-guns to its credit. In some places the Tanks captured batteries of field-guns. Since Gen. Mangin's offensive began some of them have been out four or five times in one day, and some of the drivers were at their machines for 30 hours in the first two days of the battle.

More About Tanks.

A war correspondent telegraphs to the "Frankfürter Zeitung" of July 23rd: "The enemy's tanks have never rolled up against the German lines in such masses as during the great battle. Although they were smashed in dozens by our artillery, they nevertheless forced a road for the infantry through regions which as yet were hardly fortified. Our troops get out of the way of the fire curtains and out of the way of the fire-spitting masses of tanks, and win back in valiant counter-attacks ground which the enemy imagined already securely conquered."

Referring to the withdrawal across the Marne, the correspondent says: "The position of our troops on the other side of the Marne had in the last few days become so difficult that provisions and ammunition had to be brought up to a few advanced points by aviators."

Independent Air Force Results.

The following presumably official account appeared in the "Daily Telegraph" of July 29th:—

Tangible evidence of the destructive character of the British air raids upon Thionville is afforded by two R.A.F. aerial photographs which have just arrived from France. The first photograph, taken during the raid on Thionville on July 16th, clearly shows the starting of a big fire caused by bombs among the rolling stock to the east of the goods station.

It is the second photograph, however, taken by our aviators over the same place on the following day, which is most significant. In this photograph not only are the charred remains of several trains visible upon the track, but the goods station itself and the riverside buildings to the north-east are seen to have been completely burned out. It is clear that the original fire, fanned by a strong south-westerly wind, developed into a huge conflagration, which was only arrested ultimately on the river bank.

Thionville has been raided over 20 times by the R.A.F. Independent Force during the last two months. Next to Metz, it is undoubtedly the most vital point of connection in the formidable network of railways feeding the German front, especially the Verdun sector.

The Tondern Raid.

The following account, which appeared in the daily papers on July 24th appears to be official:—

Further details of the British bombing raid on the airship sheds at Tondern show that the results are even more satisfactory than was at first supposed. According to the early reports there was good reason for supposing that two Zeppelins were destroyed in the sheds set on fire by the bombs, the flames in one case rising to 1,000 feet.

Later information obtained from one of the pilots shows that a bomb was dropped on a low, flat building which was partially underground, situated a mile to the east of Tondern. From the nature of the building and the violence of the explosion which followed the dropping of the bomb, it is likely that this was a magazine. This confirms the report already published by the Danish journal "Politiken" with regard to the raid.

The Americans Begin.

The "Times" correspondent with the American Army writes on July 26th:—

While American troops have been adding fresh lustre to their fine record, American aviators have also been winning distinction. In fighting German formations, in patrolling, and in machine-gunning troops and transport they have well fulfilled their share of battle.

Within the German lines in the last two days they have brought down seven enemy machines for the loss of only one. One aviator yesterday forced an enemy machine to land behind the American



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lines, and then coolly landed beside it and took the German pilot prisoner. Another attempted a similar performance, but the Germans had made a slight advance during the night, and, instead of securing a German, he himself was taken prisoner.

Lt. Walter Avery, of Columbus, Ohio, on his second flight over the lines, brought down a German machine. He then went over to see his capture, and found that he had brought down Capt. Mainkopf, who claims to have destroyed 15 British and French planes and one American. The German was rather proud of his record until he was told that he had been brought down by an American. He quite lost his temper when he learned that his opponent was a new pilot.

Submarine Warfare.

A submarine, which appeared off Cape Cod on July 21st, according to the "Times" correspondent, sank three coal barges and a tug. Reuter's correspondent at Orleans, Mass., U.S.A., gives the following account:—

The commander of the naval station here says that seaplanes attacked the German submarine by means of bombs, the U-boat replying with her guns. Finally, however, she submerged and proceeded to the south of four barges which she had sunk by gunfire. The submarine launched three torpedoes, all of which missed their targets.

Of the 41 persons on board, only three men were wounded by shrapnel. During the firing a lad of 11 seized an American flag and waved it defiantly towards the submarine. The attack was delivered without any previous warning. Four shells fell on the mainland, one in a pond and the others on the beach. There were no casualties.

A French Ace.

It is reported in the French newspapers that Lt. Coiffard has brought down 15 German machines in 15 consecutive days.

The Fortunes of War.

It is reported that Warrant Officer Ehrlich has become an "Ace of Aces," having won 10 victories within the last 25 days.

The Paris "Journal" reports the death of the French Lieut.-Aviator Fellineau, the famous Rugby footballer, who belonged to the renowned sporting squadron of which Lieut. Boyau is the great "ace."

Americans in Italy.

About the end of June a squadron of Capronis, under the orders of Capt. La Guardia, M.P. for one of the New York districts, and with four Americans and an Italian pilot flying them, left Milan for Rome, at which city all arrived safely, after a short stop at Pisa, for domestic reasons chiefly. One gleans that the American flying people here are out to raze the enemy's homesteads to the subsoil, and that therefore the bigger the 'bus and its bombs the better they are pleased. Undoubtedly the effect of a good earthquake (produced from above) at Vienna would be salutary for the Allied world.—T.S.H.

The Lessons of Experience.

Mr. G. Ward Price, writing from Brindisi on July 24th concerning the Italian air raid of the previous night on Durazzo, in which he took part, describes the action and writes of the return journey as follows:—

Flying out to sea away from the shells, we lost sight of land, and a strong wind gave us a drift farther and farther from the Albanian coast. After nearly two hours' flying we dimly made out land, and following along the coast came in sight of a port. This, however, so great had been our drift, was not Vallona but Brindisi, on the other side of the Adriatic. Petrol being low, the pilot decided against the alternative of fighting his way back 100 miles across the Adriatic to Vallona against the wind. He shut off his engine and planed down, signing to me to give the Morse signal with the lamp.

I had made it twice at a minute's interval when there was a flash from the shore below. "An answering signal" was my first thought, but then the whole earth and sky seemed to burst into flashes. It was an anti-aircraft barrage starting, much more intense than the one we had left behind at Durazzo. My first thought was that we had arrived at the same time as an Austrian raid. But then one realised that it was our own arrival that had alarmed the defences on the port. Our signal had either not been seen or else was mistrusted. Ships and shore batteries alike joined in the din. The ground flickered with the flash of discharges, the sky with the red flame of bursting shells.

Snatching up the lamp, the pilot signalled vigorously, but it was only under the muzzles of threatening guns that he was allowed to run the seaplane slowly towards the harbour. Once there a telephone call stopped the firing. One had seen enough, though, to realise how it was that the last time the Austrians tried to bomb Brindisi three weeks ago they lost no less than three machines.

[Which seems to indicate that our gallant Allies need a little more experience in signalling between aircraft and land defences.—Ed.]

Aerial Activity.

A frontier message of July 26th says that a Zeppelin descended in flames near Dalheim (west of Dusseldorf).

A biplane, damaged by gunfire while flying over Bruges, descended at Zuidzande on July 25th.

A Chance for the Barbarian.

Two German aviators named Nellesen and Burchardt are stated to have been captured by Bolshevist troops while flying over Rus-

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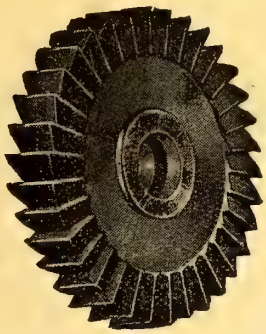
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sian territory and to have been shot. A protest is said to have been lodged by the German Government.

[One hopes that Germany will wreak summary vengeance on the Bolsheviks, for a massacre of Bolsheviks would be a blessing to humanity, and Prussian barbarity would, for once, be useful.—Ed.]

WHY?

The following letter, which is of remarkable interest, appeared in the "Times" of July 19th:—

Sir,—How is it that in bombing raids on Germany our aviators always carefully avoid Frankfurt-on-Maine, although it is, next to Berlin, one of the most important towns in Germany, densely populated, seething with war industries, and a military centre of considerable magnitude?

But over and above all that it is also the cradle of cosmopolitan finance, the home of those eminent banking authorities whose advice our rulers are wont to seek on questions of economic welfare and possibly on other matters also, and it is well represented on his Majesty's Privy Council.

These perhaps are some of the reasons for its immunity.

Yours, etc.,

Fredk. Wm. Hanson.

Sports Club, S.W., July 18th.

LORD MONTAGU AND BOMBING.

Lord Montagu of Beaulieu, speaking at Brockenhurst on July 20th, said our Air Forces were superior to-day to what they had ever been. We should shortly have a machine which would enable us to carry out the bombardment of German towns behind the lines much more effectively than anything we had done before. Long-range bombing was becoming more and more important. There were more important targets, especially in the lower Rhine and Westphalia, where the bulk of the German munition factories were, than there were within range of German raiders. He had great hopes that we should be able to do much to destroy the supplies upon which the German army depended, and what was almost as important, the moral of the enemy. As far as he could see, although it was by no means perfect, our air organisation to-day was certainly in a more efficient state than it had ever been before.

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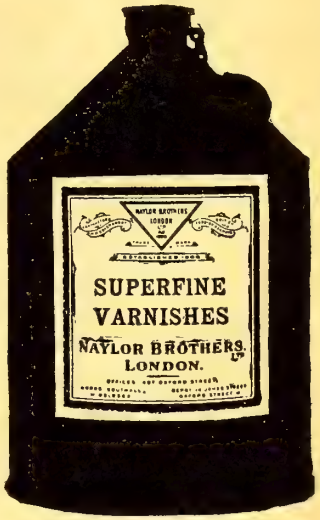
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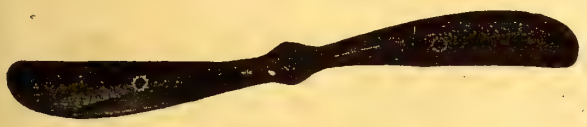
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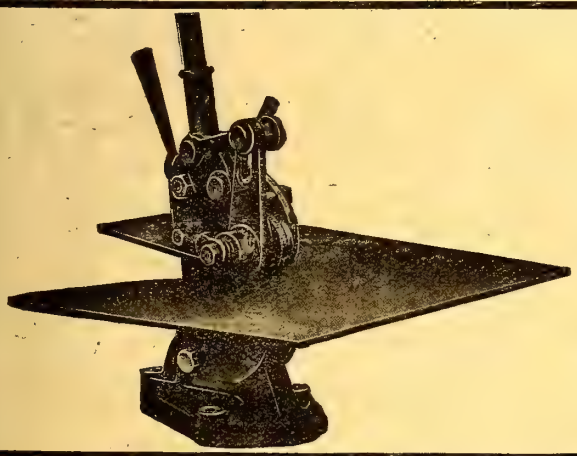
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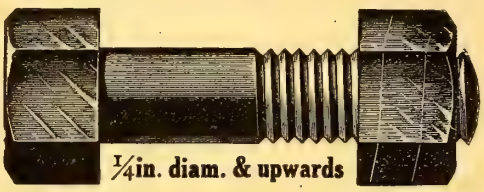
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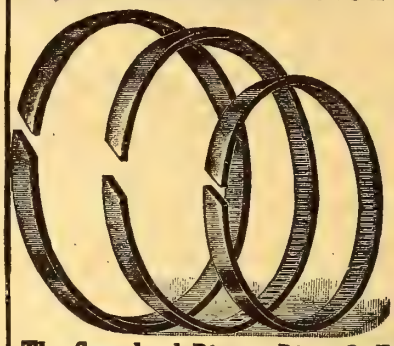
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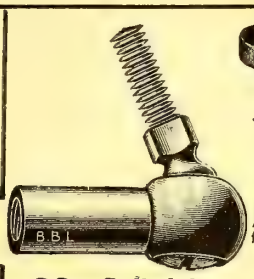
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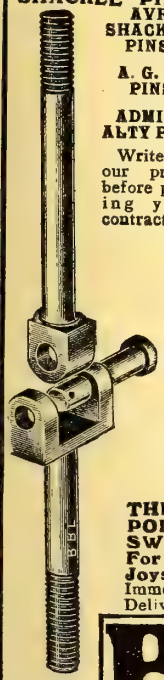
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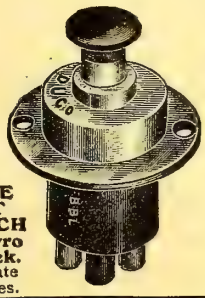
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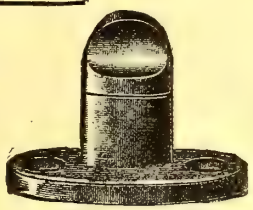
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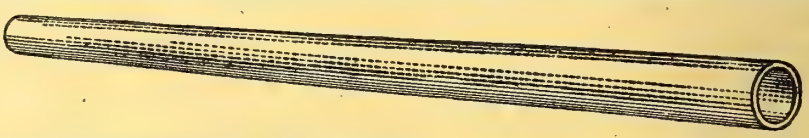
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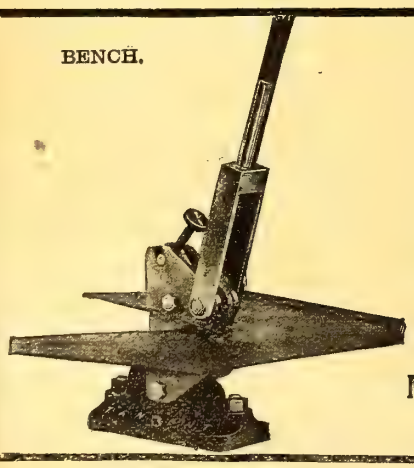
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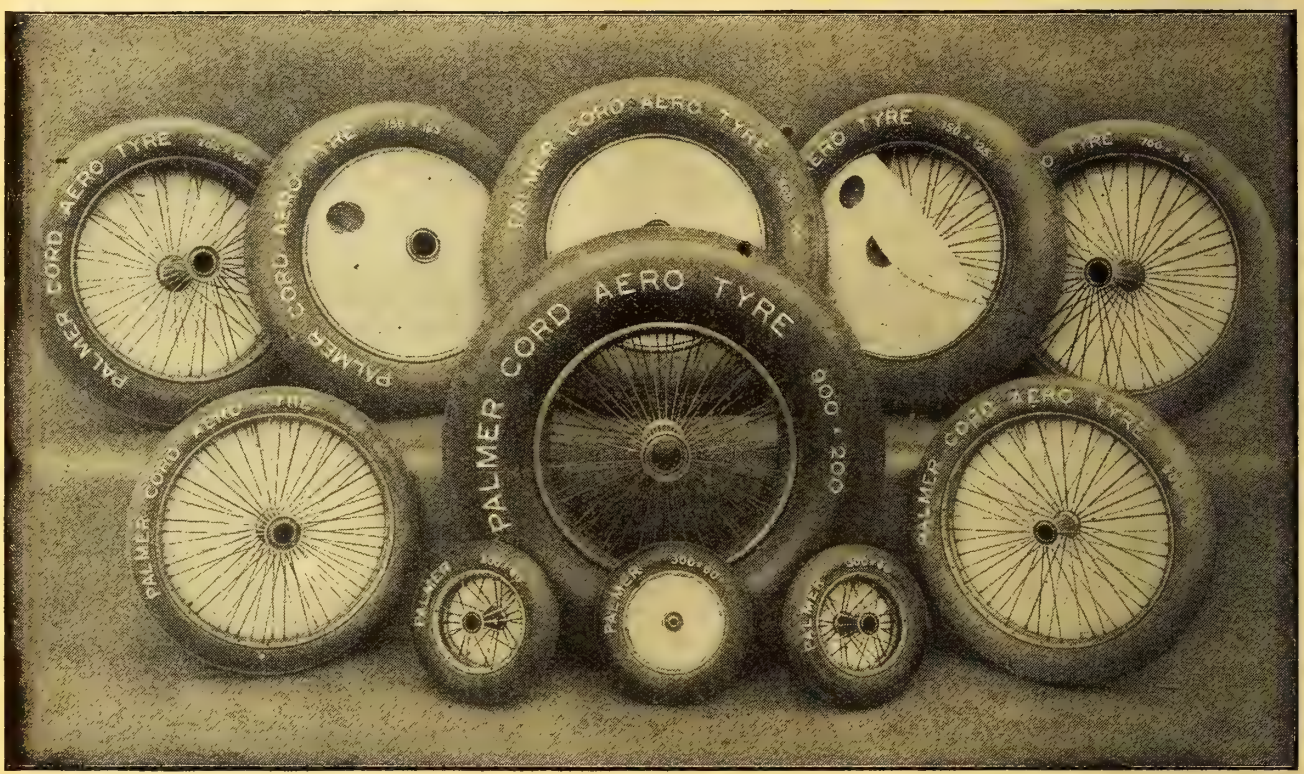
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,,	17	72.39	12.7	Central	,,	77	178.	44.45	132/46	,,	82	185.	55.	135/50
450×60	30	89.	31.75	Central	,,	92	185.	55.	135/50	,,	85	185.	55.	Central
575×60	21	160.	28.	Central	,,	95	185.	55.	Central	,,	106	185.	47.62	135/50
,,	34	150.	31.75	104/46	,,	96	178.	55.	132/46	,,	†205	185.	60.32	Central
,,	111	150.	38.09	104/46	,,	99	178.	38.89	132/46	1000×150	97	250.	65.4	Central
650×65	78	178.	44.45	132/46	,,	112	150.	40.	Central	,,	102	185.	55.	125/60
,,	79	178.	44.45	Central	650×125	119	178.	55.	132/46	,,	201	185.	60.32	125/60
,,	100	178.	38.09	132/46	750×125	33	150.	38.09	Central	900×200	107	185.	55.	Central
,,	101	178.	31.75	132/46	,,	77	178.	44.45	132/46	,,	108	185.	55.	125/60
600×75	21	160.	28.	Central	,,	92	185.	55.	135/50	,,	120	185.	66.67	125/60
,,	34	150.	31.75	104/46	,,	95	185.	55.	Central	,,	202	185.	60.32	Central
,,	111	150.	38.09	104/46	,,	96	178.	55.	132/46	,,	208	185.	60.32	125/60
700×75	78	178.	44.45	132/46	,,	99	178.	38.89	132/46	1100×200	52	185.	55.	116/69
,,	79	178.	44.45	Central	,,	112	150.	40.	Central	,,	57	185.	55.	Central
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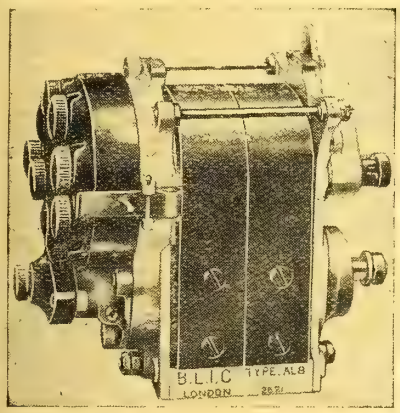
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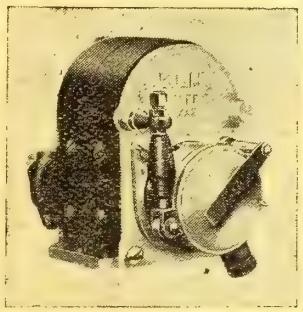
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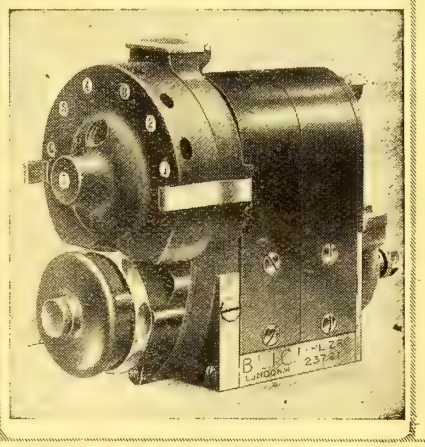
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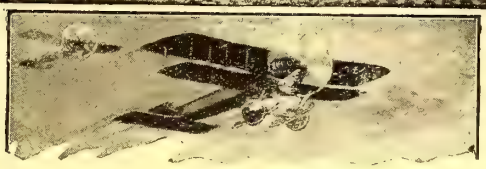
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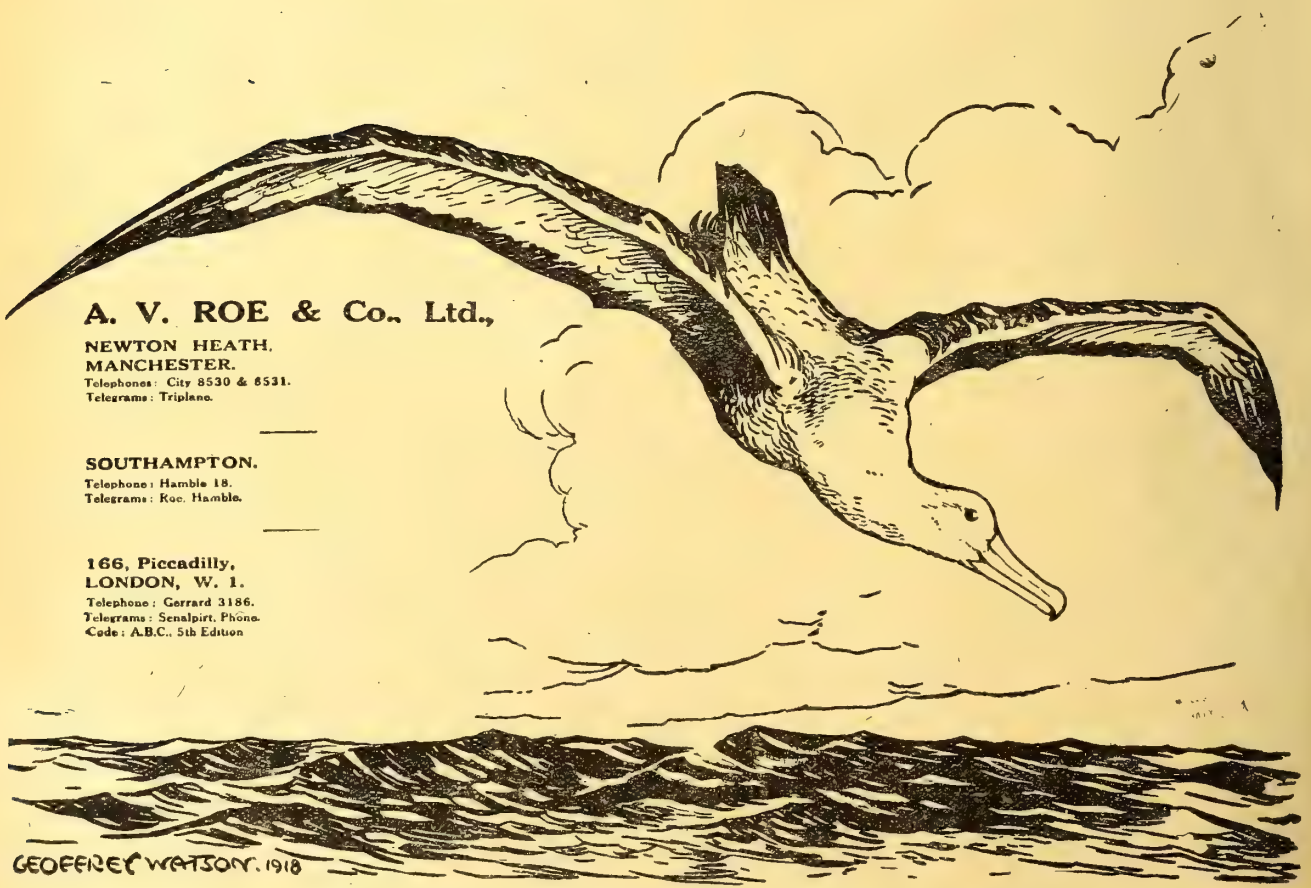
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ON THE LITTLE THINGS THAT MATTER.

Taking it all round, affairs are progressing remarkably favourably under the Air Ministry. Rome was not built in a day, and one cannot expect that queer *poisson d'Avril*, the Royal Air Force, to develop in four months, or in six, into the three necessarily distinct Flying Services, as it must eventually. The Single Air Force was the child of a well-meant but misguided political agitation, the result of an unnatural liaison between opposite political parties.

If there had been a strong anti-Government opposition the whole foolish proposal would have been properly debated and the Single Force would never have come into being. It is only another of the freaks born of that insane alliance, the Coalition Government. However, in due course the Flying Services will split up into their proper divisions, and we shall see an end of R.F.C. pilots doing sea patrols, and R.N.A.S. personnel pretending to be soldiers.

Meantime, the old original R.F.C. on active service carries on much as usual, and the new R.A.F. pilots and observers drafted to it soon pick up Army ways and become soldiers. The Independent Air Force, under its own able chief, is developing excellently along its own lines, and as it grows in size will make life in Germany very unpleasant. The R.N.A.F. also is beginning to show signs of genuine activity, as for example the recent raid on Tondern, the first really Naval aerial operation since the raid on Cuxhavn on Christmas Day, 1914.

One leaves out of the question semi-naval co-operation between the Army on land and seaplanes helping along the coastal flank, as in the Eastern Mediterranean and other war areas, where, very properly, much of this amphibious work has been done under the command of officers of that splendid corps, the Royal Marines. Needless to say, being merely Marines, the High Authorities have never felt it necessary to recognise their good work as it would have been recognised had the local Admirals, or Generals, been interested in them as members of their respective Services

However, as one has said, things in general are progressing as favourably as can be expected, though possibly the improvements now in progress could be expedited. Nevertheless there are very many matters which may seem to be minor points, but which in the end turn out to be of prime importance.

Why These Delays?

There is, for example, the question of delays in producing new and improved types of aeroplanes. One commends very strongly to the new Technical Department the old bitter jest that we have never been less than six months in front of the Hun in design and never less than twelve months behind him in deliveries. Let the present Technical people remember the Sopwith "1½-strutter" which was produced in June, 1915, and first went into action on the Somme in September of 1915.

One can point to cases which are just as bad under the present régime. There is at least one single-seater which is far faster than anything at the front and no worse as a fighting machine, which has been in existence for 18 months, and is still not on order in quantities.

There is another, possessing special qualities of its own which make it particularly suitable for a certain kind of work at the front. It is over 12 months old, and it is being ordered in small quantities for another species of work for which it is not particularly suited. Both these are better offensive fighting machines than any single-seater in use in any belligerent Service to-day.

There is a small defensive fighter, capable of beating either of these machines at its own peculiar game, and therefore a necessary factor in any active-service air force. It has been in existence for nearly 12 months, and it also is not in production.

All three of those machines might have been in use on active service 6 months ago in huge quantities. All are better performers than any machines now at the front. Yet while they have been hung up, huge contracts have been placed for other machines which are inferior in performance, more troublesome to build, and, in certain cases, weaker in design and therefore less safe to fly.

One can point also to certain bombing machines, one of which existed some 12 months ago, and another over 6 months ago. They appear to have been hung up because another more favoured design kept on promising to beat them and kept on failing to do so. No other reasonable explanation seems possible, for there are the machines to-day, practically as they were when first offered to the old Air Board, still unbeaten for performance, and still not in production.

The Results of Unsettlement.

One cannot altogether blame the present Technical and Supply Departments for these delays, because there have been so many upheavals at the Hotel Cecil that none has quite known whether being a General to-day he might not, if he took a false step, be a Captain to-morrow, or whether, being a Second Lieutenant to-day, he might not, if he played his cards properly, be a General to-morrow. Consequently anyone who took any great responsibility on himself ran a grave risk of injuring his Service Career, and, of course, one's Service Career is of more importance in getting on with the war than is hustling along the production of new and improved aeroplanes and engines.

While so many violent changes are taking place high up, it is perhaps wiser to sit tight in one's little office and merely work steadily to improve the output of good old standard types, even if they are becoming obsolescent, or else to back up a few new types which are known to have so much pull behind them that even if they

are not quite so good as others of which one knows, they are at any rate guaranteed not to let one in for blame if they fail to do all that the active-service pilots would like.

To Acquire Merit.

Another very good way of protecting one's Service Career, and at the same time of acquiring merit, is to dabble in a scientific way in something quite new which cannot very well develop into anything important until the position of the war on what a Service humorist has called the Bolo Sector of the Strand Front has become stabilised.

For example, suppose that some ingenious inventor, backed by a little syndicate of people who want to win the war, produced some wonderful new method of manufacturing synthetic whale-bone and building from this substance a lattice-girder spar and rib edifice which would in time entirely oust the common or garden timber and wire wing construction. It would obviously be a good game for some minor official to specialise on this method of wing construction, so that when it had overcome all its "teething troubles"—as Lord Weir humorously called analogous troubles in engines—the said minor official could blossom forth as the great authority on this subject.

Put Yourself in His Place.

Putting oneself in the place of the minor official, one might go and make friends with the proprietors of the whale-bone wing, and under guise of helping and encouraging them one might discover precisely all the tricks of their trade which had cost them a couple of years' hard work and some thousands of pounds to learn. One might even encourage them still further by getting orders for them for trial wings for obsolescent types of machines.

Then, by way of putting oneself on a surer foundation, one might go to some big firm or other which was used to handling ordinary whale-bone, say some big corset manufacturer, and by combining one's own knowledge—gained from the original inventor—with the production knowledge of the corset manufacturer, one might produce a wing or a spar of synthetic whale-bone, sufficiently unlike the original to give the impression to non-technical chiefs that it was quite a different thing.

After which one might introduce the corset-making firm to one's departmental chiefs, who would naturally receive with open arms a big and much-advertised firm who proposed thus patriotically to chuck up a luxury trade—by the way, are corsets luxuries or necessities in these days?—and become producers of aeroplane wings. In this way one would become immensely popular with one's chiefs for introducing such an excellent new source of production, and so one might hope for promotion if one's chiefs' political sponsors came out on top at the finish.

On the other hand, whale-bone wings being bound to come out on top some time or other, politics or no politics, one would have acquired merit with the corset manufacturer, and so one might reasonably expect him, when his big contracts came along, to give one a really good job at a really good salary as technical manager of the whale-bone wing department, and to apply to the Ministry for one to be "seconded for special duty." Thus one would be able to live the life of a prosperous war-profiteer and at the same time swagger around in uniform and take salutes from real soldiers who have fought for their country.

What Might Happen.

Meantime what happened to the original whale-bone wing firm would probably not matter much, assuming that, like most inventors, they were little people who were not business men, and had only small experimental works to which one could point in a lordly way and say that they were unfit for quantity-production. For, of course, one's friend, the corset manufacturer, would be the person to organise the quantity-production and to tell sub-contractors how to produce whale-bone wings. Which is quite sound, on the principle that the best teacher is he who is only one lesson ahead of the class. But it might be awkward if the original whale-bone wing firm happened to be one with considerable financial and political backing, in spite of the apparent insignificance of its experimental works. And it would be still more awkward if the proprietors possessed what is called in official communiqués about our aviators, a "strongly offensive spirit."

If, for instance, at a meeting of contractors one were to produce samples of the whale-bone wing and dissertate on the merits of the corset manufacturer who had "invented" it, one would feel quite awkward if a representative of the original whale-bone wing firm, who had somehow been invited by mistake, were to get up and demonstrate that his wing was some years older, and better by that much extra experience.

Official Policy and Minor Officials.

You see, such a method of handling the business would not be in agreement with Lord Weir's new policy of encouraging trade designers. Designs produced by firms right outside the Aircraft Industry to suggestions made by officials who have absorbed their ideas from firms right inside the Aircraft Industry remind one a little too much of the old Royal Aircraft Factory method of producing official designs from the close investigation of Trade designs, and then giving orders for the reproduction of the official designs to firms outside the Trade, while the original Trade firms were left to starve.

Lord Weir has publicly stated his policy of encouraging Trade designs, and the success of his régime in the past has been founded on that policy, therefore he might be quite annoyed if he found that minor officials were reviving the old R.A. Factory methods in a slightly different guise, for their own ultimate benefit.

One does not believe that such an affair as one has outlined could possibly occur under the excellent system which now exists, but, if it did, no doubt the Society of British Aircraft Constructors is now sufficiently powerful to take up the matter with the Secretary of State himself if need be. And when once Lord Weir's attention was directed to such a business one knows that there would be another mine sprung on the Bolo Sector of the Strand Front. One merely goes to the trouble of imagining such an affair by way of warning to minor officials who may be, with the best intentions in the world, laying themselves open to awkward constructions being put on policies which they are pursuing without the full knowledge of their superiors, and also by way of indicating to higher officials how the little things that matter may go on unnoticed for quite a long time.

A "Freeze-Out."

Such an affair might happen in connection with dope, or with a new form of timber construction, or with a new fabric, or with quite a number of other things. It may even be the policy of some quite highly placed officials to "freeze out" small firms and hand the products of their brains over to big firms outside the Aircraft Industry, so that the said big firms may make huge profits, subject to excess profits duty, and so help to pay for the war. But one is convinced that such is not Lord Weir's policy, and one is absolutely certain that it is a rotten bad policy from the point of view of giving the active-service aviator the best of everything in the shortest possible time.

After all, the man on active service is the most important person in the war. Everything else should be

subordinated to his interests. All these petty squabbles, personal intrigues, party politics, minor official grafts, and the general inefficiency at the Hotel Bolo are contrary to the interests of the active-service aviator, and ought to be crushed ruthlessly. They will be crushed when they come to the personal notice of men like Lord Weir and Sir Arthur Duckham, which is why one ventures to indicate the direction of some of the little things that matter.

The Fourth Year of the War.

We have now finished our fourth year of war. As a result we have an Air Ministry, complete as fitted. We have a far better Air Minister than we deserve to have, and he is full out to win the war. We have a Royal Air Force which has not yet "found itself," in that it is one amorphous mass instead of being clearly divided into its three component parts for Air, Land, and Sea War, and yet it holds a marked superiority in the air in all war zones. We have a Chief of the Air Staff who possesses great ability and foresight, and who is as earnest as is the Air Minister in his desire for Aerial Supremacy. We have the best aeroplanes and engines in the world on active service, but we have far better ones at home.

The R.A.F. with the Allied Armies in the field and the Independent Air Force operating against German territory are commanded by two of the most able and brilliant soldiers whom this country has ever produced. The R.A.F. with the Fleet has begun to show "a certain liveliness," and the anti-submarine air operations have become increasingly effective in spite of lack of encouragement from their Lordships of the Admiralty in the past four years.

But we have not yet obtained that Command of the Air which is necessary to the future safety of this country and to the present early victory in the field. To achieve such a command we must have not only such excellent chiefs as we now have and such magnificent fighting men on active service as we now have. We must have perfect machinery of selection and transmission in all the intermediate stages between these two extremes. It is no use having a perfect engine and perfect tyres on a car if there is a bad gear-box or differential in between.

And it is in those intermediate stages that our chief dangers lie. The selection of new types of machines and engines, the organisation of supplies, and the rapid transmission of those new types to the people on active service need to be perfected. The selection of new personnel, their rapid and effective training, and their dispatch on active service can be made more efficient. Such perfection and efficiency do not depend on the broad principles laid down by the High Authorities at the top, nor do they depend on the organisation at the front. They depend on the minor officials at home. And that is why it is the little things that matter.

Altogether, considering the unholy mess we made of our aeronautical affairs during the first three years of the war, we have every reason to be pleased with the results of the fourth year.—C. G. G.

BELLS AND BUNKUM.

It is said that one of the latest freak ideas of the new Administrative side of the R.A.F. is the telling of time at Aerodromes by bells, in the Navy's fashion. Can this really be true?

When the R.N.A.S. was an integral part of the Navy, and the personnel of Naval Air Stations was being trained to serve with the Navy, the rule was reasonable enough. Even if the R.A.F. had a distinct Naval Wing, the personnel of which was being trained for Naval service, it would be sensible to use Naval methods of measuring time and distance. But considering that the vast majority of the R.A.F. will always serve with the Army or with the Independent Air Force, the notion of telling the time by bells is merely silly.

The use of bells on board ship is a relic of the stick and string Navy, when the crew worked so hard making and shortening and trimming sail that a four-hour "watch," or spell of work, was as much as a man could stand. The Navy being still, except in mechanical matters, somewhere in the reign of George III., even now works in watches, though, so far as its big ships are concerned, it would do far better with a day shift and a night shift, like any ordinary workshop. Consequently the measurement of time in "bells" survives as a useless relic of the past, along with watches, sailors' collars, and other Naval phenomena which only remain because of sheer conservatism.

Why the already over-crammed mind of the R.A.F. "Hun" should have to bear the additional burden of learning that when he hears three bells somewhere in the afternoon it means that it is five minutes to four, or something equally irrational, Heaven only knows. To the ordinary person who has been educated in the ordinary way, instead of being taken away from school before he has learned anything to be brought up at Osborne, the Naval bell system seems about as rational as the Irishman's clock, from which he said it was quite easy to tell the time because when it pointed to a quarter past three and struck five one knew it was a quarter to four.

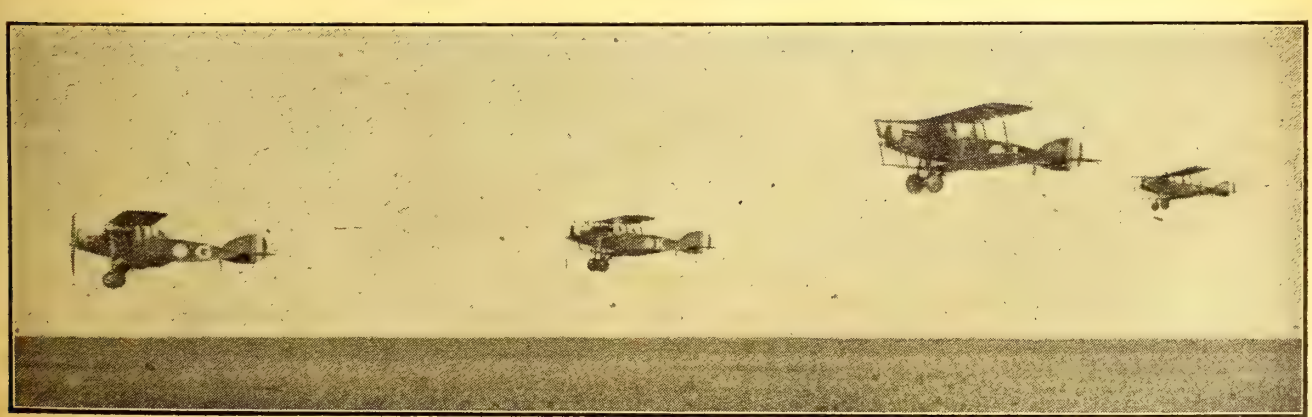
There is far more new and useful knowledge to be imparted to the R.A.F. cadet, or junior officer, than he can possibly learn before he goes on active service, and it would be hard to think of any more utterly silly way of wasting his valuable time than lumbering up his mind with a lot of futile and fatuous Naval antiquities. It seems as foolish and wasteful as it would be if one sent ex-R.F.C. officers to do anti-submarine patrols on shore-going school machines. And that is about the limit of fatuousness which the present writer's mind can conceive without official assistance.—C. G. G.

QUESTIONS IN THE HOUSE.

On July 31st, **Mr. Macpherson**, Under-Secretary for War, asked by **Col. Wedgwood** whether he was aware that the German Government were now justifying the bombing of the Etaples Hospital on the night of May 19th-20th by the allegation that the Red Cross was not shown; and would he inquire into and expose this statement, said:—I am aware that the German Government are justifying the bombing of Etaples Hospital on the night of May 19th-20th, by the allegation that the Red Cross was not shown, and I have seen in a German newspaper photographs published by them with the intention of proving that the Red Cross sign did not exist on May 21st, but did exist in large numbers on the 27th. German photographs of this nature, as we have reason to know, are never conclusive. In any case the hospitals were bombed on the night of May 31st-June 1st in spite of the Red Cross signs which German evidence shows to have been in existence on May 27th.

Col. Wedgwood: Is the right hon. gentleman satisfied that the Red Cross was shown on May 19th?

Mr. Macpherson: I am personally satisfied it was.



A Patrol of British Fighters in France.

AIRCRAFT OUTPUT.

Sir L. Worthington Evans, M.P., formerly Financial Secretary to the Ministry of Munitions, states in the War Anniversary issue of "Overseas" that the number of firms in the United Kingdom engaged on munition contracts is well over 10,000, and the national arsenals have been increased from three to more than 200. Although some 6,000,000 men have been withdrawn from industries for service with the Colours, their places have been eagerly filled, and on munition work alone nearly 3,000,000 men and women are regularly employed.

During the first five weeks of the German offensive, which began on March 21st, nearly 1,000 of our guns and between 4,000 and 5,000 of our machine-guns were captured or destroyed, while the amount of ammunition lost in dumps amounted to something between a week's and three weeks' total manufacture. None the less, by the end of April all this loss had been more than made good and there were actually more serviceable guns as a whole and more ammunition available than there were when the battle opened.

British factories are making in a single week more aeroplanes than were made during the whole of 1914, in a single month more than were made in 1915, and in a single quarter more than were made in the whole of 1916. These results, the writer says, we owe in the first place to the patriotism, loyalty, and generosity of British labour.

Some nine-tenths of the whole manufacture of shells are due to the labour of women, who, before the war, had never seen a lathe.

A CADETS' CLUB.

A club for officer-cadets, to be known as the Overseas and Imperial Officer-Cadets' Club, will shortly be opened at 5, Cambridge Gate, Regent's Park. The idea, which originated with Major Brinsmead, A.F.C., has been carried out by Mrs. Harry Moncrieffe. The house itself is lent by Col. Morrison-Bell, and various other well-known people have made valuable contributions. Another house has been provided by the Soldiers' Club Association, to which the Officer-Cadets' Club is affiliated.

All officer-cadets are members of this club. The prices, for bed, meals, etc., being those prescribed by the War Office are upon a modest scale. Naturally, the club has its wants. Good modern books, new magazines, and illustrated weekly papers are most useful. Voluntary workers are also needed.

The need for a club of this sort was very great. Though there are already two clubs for officer-cadets, these are situated in the West End, and are nearer the southerly railway termini, while the Overseas and Imperial Officer-Cadets' Club is very convenient for the termini in the King's Cross district.

The rank and file have their clubs, such as the Union Jack Club, and fully commissioned officers have their co-operative palaces in the West End, so it certainly seemed a little unfair that the cadets should be so badly off in this respect.

A NEW AUSTRIAN AIRSHIP FIRM.

It is reported in the "Berliner Tageblatt" that a new company, named the Austrian Zeppelin Works, has been established at Hoerbrands, near Bregenz. The German Zeppelin Company of Friedrichshafen has an interest in the new Austrian concern.

ADVICE TO AMERICA.

The New York correspondent of the "Daily Telegraph" writes on July 29th:—

Maj.-Gen. Brancker, of the British Air Ministry, in a statement to the Associated Press, urges the establishment of an Air Ministry in Washington, modelled on the lines with which you, in England, are familiar. The American Air Forces, he declares, should be organised on a basis independent of the land and sea forces, and the appointment of an independent head is vitally important.

Until an Air Ministry is appointed, and the Allies co-ordinate their efforts in the aerial department, General Brancker will make no predictions about an aerial offensive on a grand scale carried to the cities of the Germans remote from the battle line.

No figures may be cabled to your side respecting the production of the Liberty motor, and how many are available for the Allied Service, but one is permitted to mention that the Air Service alone of the United States, according to the "New York World," is now bigger in numbers of men and officers and in branches of organisation than was the whole Regular Army when the United States entered the war.

[Maj.-Gen. Brancker has been away for a little while; so, doubtless, he does not fully appreciate the growing dislike of the "Combined Service" idea, otherwise he would scarcely recommend it to America. If America can find a William Weir to boost supplies and co-ordinate effort, all will be well. But if America is wise, there will be three distinct Flying Services, so far as personnel is concerned.—Ed.]

CRAZINESS IN AMERICA.

The "Morning Post" correspondent at Washington writes on July 31st:—

Reports having been put in circulation here, which may doubtless find their way abroad, that General Pershing has condemned the American de Haviland bombing aeroplane and requested that no more be sent to him, I have investigated the matter, and learn through official sources that, far from General Pershing regarding the de Haviland as worthless, he has asked that as many as possible of these machines be shipped during the coming month, and that they be given priority over other supplies.

Aircraft production has, since the beginning of the war, been more constantly under attack than any other branch of military supply, and the charge was once made that the whole service had broken down. There is no truth in these charges.

Machines of various kinds are being turned out and the output is daily increasing, the machines being excellent of their type, but there is a pronounced feeling that aircraft production has assumed such huge proportions and is such an important branch of military service that the creation of an Air Ministry would expedite manufacture and simplify somewhat the complication of organisation, which does not result in the highest efficiency.

Aeroplanes are now manufactured partly in Government factories and partly by private contractors, the Army and Navy having their separate establishments and each service training its own flyers. If the Government took over all private factories and consolidated the naval and military flying corps it is believed great benefits would follow.

[Probably the yarn about the de Haviland machines was started by some of the disgruntled "Detroit Gang," as the people who messed up the 1917 Aircraft Programme in America are generally called. Possibly it is the Liberty engines which General Pershing does not like, and not the aeroplanes.

As to the last paragraph, the "Morning Post" man in Washington must be mad. If the American Government amalgamated its Services and takes over the private factories then we can say good-bye straight away to all hope of a real American air fleet in time for this war.—C. G. G.]

R.A.F. SPORTS.

On Saturday, August 3rd, No. 1 Stores Depot, R.A.F., by permission of the Officer Commanding, Lt.-Col. W. H. Lang, R.A.F., held a sports meeting, under the patronage of Maj.-Gen. F. V. Heath-Caldwell, C.B., R.A.F., G.O.C. South-Eastern Area.

The events and their accompanying prizes were numerous. The awards were distributed by Mrs. Heath-Caldwell.

Following the sports, the band of the Royal Regiment of Artillery, conducted by Lt. E. V. Stretton, M.V.O., gave a concert. The whole function passed off very successfully.

AN R.A.F. CARNIVAL.

At the invitation of Brig.-General W. Alexander, C.M.G., D.S.O., a sports carnival was held by the Supply Department of the Aircraft Production Department on August 3rd, at Queen's Club, Fulham, S.W.

The competitions were numerous, and various side-shows afforded much entertainment.

General Alexander defrayed all expenses, and donations made by visitors were handed to the R.A.F. Prisoners of War Fund.

R.A.F. CADETS ON SHOW.

On Aug. 5th a display was given at an R.A.F. cadets' training centre. The show began with a ceremonial parade on historic ground.

Brig.-General Critchley, O.C. this centre, directed proceedings, and among the officers present was Prince Albert, who is second in command of a cadet unit.

No. 8 Cadet Wing, in white jerseys and blue shorts, paraded on a hillside and gave a living record of the R.A.F.'s war honours. Figures were formed by masses of men manœuvring to produce the following legends:—"V.Cs, 15"; "D.S Os, 235"; "M.Cs., 905"; "D.S.Cs., 287."

Thereafter the cadets, of whom there were some thousands, formed up by wings and marched past, the salute being taken by Lord Weir, Secretary of State for the Air Force.

After the parade there was a display of massed boxing—a novel feature of R.A.F. training, intended to produce a resourceful fighting man rather than a well-drilled soldier.

The physique of the cadets impressed the onlookers very favourably, and suggested that the R.A.F. is taking its share of the nation's young men. The smartness of the parade and the accuracy of the units in movement reflected the highest credit on General Critchley and his staff.

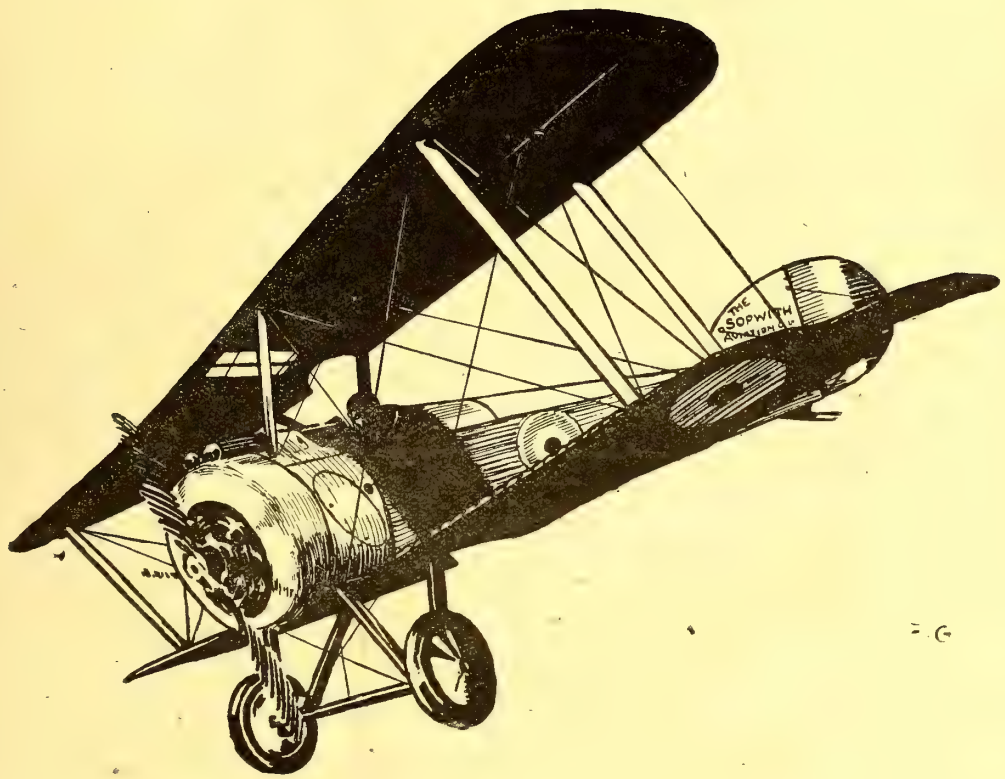
CONGRATULATIONS.

BERRIMAN—SUTCLIFFE.—On July 31st, at the Chapel Royal, Savoy, Algernon Edward Berriman, O.B.E., was married to Enid Kathleen, third daughter of the late J. M. Sutcliffe and of Mrs. Sutcliffe, of Westville, Leek.

Mr. Berriman, who was formerly a well-known motor journalist, and later an aeronautical journalist, is now technical expert to the Daimler Co. As a scientific writer before the war he achieved considerable distinction, and has published several books which were of value for reference purposes. He is a member of the Civil Aerial Transport Committee, and was recently presented with the O.B.E., though one hopes this last point will not be considered as evidence against him.

As one of the pioneers of aeronautical journalism, and an aviatic old-timer, all will wish him and his bride every good fortune and happiness.—C.G.G.

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

A PIONEER OF BRITISH AVIATION.

As recorded in last week's Aeroplane, Captain Charles Gordon Bell was killed while flying in France on July 29th. He was, one learns, flying a new and very fast machine over a speed test at Villacoublay, near Paris, when something went wrong with the elevators, and the machine hit the ground. The machine was designed to give high speed at a great height, and the assumption is that while it was going all out near the ground it was necessary to hold it down with the elevators to prevent it from climbing. Possibly it encountered a sudden strong ground-gust while thus held down, and the shock caused a distortion which made it impossible for the pilot to regain control before the machine crashed.

Another theory for the accident is that he was coming into the aerodrome slowly, preparatory to doing a speed test close to the ground, and, owing to having the sun in his eyes, misjudged his speed, got down too slow, started a dive after a stall, and hit the ground before he could regain control. Apparently it is established that he had throttled right down for some time before the accident and hit the ground with the engine running beyond its top speed, which bears out the theory that he opened out in the endeavour to obtain elevator control.

Charles Gordon Bell was born in London on May 31st, 1889. He served his time in engineering works, and when flying first began he was a specialist in car-testing at the Napier works. He came to Brooklands early in 1911, and learned to fly on the old Hanriot monoplane, familiar to all aviators of the period as the "Henrietta." He passed his certificate tests in June, 1911, his ticket, which was No. 100, being dated July 4th, 1911. Thereafter he flew Deperdussins, and later went to France as chief test pilot to M. Robert Esnault-Pelterie, whose R.E.P. monoplanes were then among the finest aeroplanes of the day.

While with the R.E.P. firm he delivered several machines to the Turkish Army, and while doing so achieved the distinction of being the first person to fly from Europe to Asia and back, in a trip across the Bosphorus. He received the Order of the Mejidieh for his work in Turkey.

On his return to England he set up as an independent test pilot and did very well. During the Military Trials in 1912 he flew the big Martinsyde monoplane, which, but for a defective engine, would have gone very near winning the competition. Later on he had a very bad smash at Brooklands, in which his passenger, Mr. Kennedy, R.N., was killed. Bell himself was unconscious for weeks, and his life was only saved by removing a large piece of bone, so that ever after he had a hole in his skull.

Curiously enough, this did not in the least affect his flying, for when, after many months, he returned to work, and became test pilot to the Short Brothers, he flew their big seaplanes with all the skill with which he had flown big and little aeroplanes before.

On the outbreak of war, being an officer of the R.F.C. Reserve, he went to France with the historic "First Five Squadrons," and flew one of the first two "Bristol Bullets" to go on active service. After a year or so in France, during which he went through all the historic warfare of that period, including the retreat from Mons, and the battles of the Marne, Aisne, and Ypres, he came home to do instructional work.

He was first of all a flight commander and then a squadron commander, at Gosport and at the Central Flying School, where he did excellent work, as is shown by the official records of the results achieved under his command. About a year ago he was invalided out of the R.F.C., chiefly, one believes, as the result of a misunderstanding, and retired with the rank of captain. Actually he was a good soldier, and genuinely proud of his Corps and of the British Army. But, being Gordon Bell, he had his own ideas of discipline, and, though he got his work done better and quicker than most people, his ideas did not always agree with those of senior officers.

Gordon Bell deserves to go down to history for one thing, if for none of his other feats, and that is the invention of the "Immelmann turn." Bell, when he came back from France in 1915, started teaching the Immelmann till everybody was doing it, as they used to do the tango. It became a legend that it was Captain Immelmann's favourite trick of attack, or his favourite method of escape when attacked by superior numbers. And it was not till it became universal that the humorist Bell took the trouble to explain that Immelmann did not do the trick at all, but that he, Bell, invented it himself, on the spur of the moment, when scared stiff by the German star turn, on his Fokker monoplane, getting onto his tail and stopping there till Bell did the now familiar quarter-loop, cart-wheel, and dive combined, which left Immelmann going full speed ahead, while his desired victim was making his best pace for home in the opposite direction.

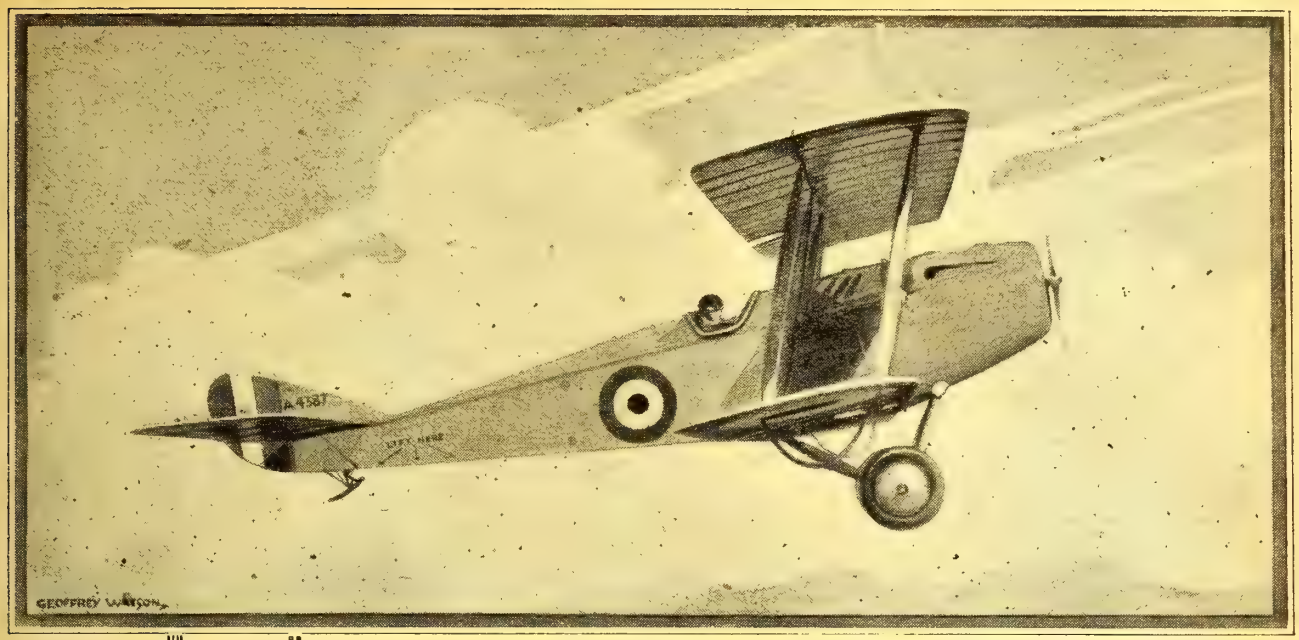
After leaving the Corps he again took up test-flying and did much good experimental work on Handley-Pages. More recently he joined Vickers, Ltd., where his skill as a pilot and his knowledge of aeroplane construction was highly appreciated by the chiefs of the aviation department. Gordon Bell never hesitated to speak his mind, and he was most enthusiastic over the types which he had been testing of late, so that one feels confident that he had no doubts about the quality of the machines.

He went to France recently on a special mission to demonstrate a new machine to the French authorities, and was killed while flying near Paris.

Personally Gordon Bell—who did not use a hyphen, his Christian name being Gordon—was one of the most extraordinary characters whom it has ever been my good fortune to know. With the sole exception of Douglas Graham Gilmour I have never met anyone who could be so thoroughly offensive or so perfectly charming according to the mood or the circumstances of the moment. Everyone who knew him well lived in a continual state of exasperated affection towards him. At times people who did not know him thought that he was mad, but as a matter of fact he was no madder than any of the rest of us who took to flying before 1912—one had to be a lunatic of some sort to waste one's time on aeroplanes in those uncommercial days. It was his exuberant sense of humour which really upset the stolid Englishman; and the R.F.C. to-day is full of legends of the astounding doings and sayings of "G. B."—as he was generally called in the Corps.

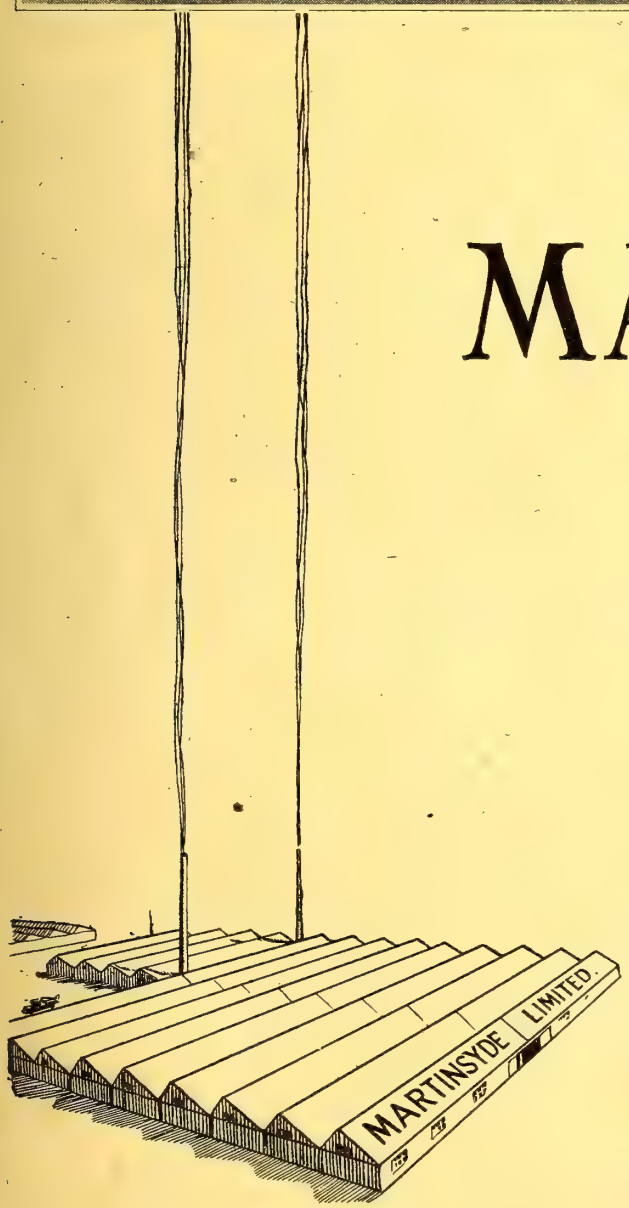
If one could only collect all the stories which have been told about him, they would make a very joyous book. Many of them would probably be apochryphal, but a man has to be something of a personality to have yarns saddled on him. Somehow Bell's quaint sayings were made funnier still by his queer little stutter, which always seemed to add to the point of his remarks.

The best-known yarn about him is one for which he always strenuously denied responsibility. The story alleges that in the very early days of the war he landed his Bristol Bullet in the top of a tree, and in some marvellous way climbed down unhurt. A kindly





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Brigadier, whose rank-marks were hidden by a trench-coat, came along and said to him: "Have you had an accident?" "N-no, you blank fool," replied G. B.; "I always l-land l-like that!" This was too much for the Brigadier, who demanded to be told his name and squadron. To which G. B. replied: "If you want to p-play the c-c-comic policeman, you'd better c-climb the blank tree and g-get my number off my t-t-tail!"

A typical example of his particular serio-comic brand of humour occurred a few months ago. He had a spotted Dalmatian "plum-pudding dog," of whom he was very fond, which lived with him in his fourth-floor flat near Bond Street. The dog knew the sound of G. B.'s car, and one day, when he had been left alone in the flat, he heard the car coming, jumped up to the open window to see his master arrive, overbalanced himself, fell out, and was killed on the pavement below. In falling he just missed dropping on the head of a well-known Duchess who was passing. G. B. in telling me about the tragedy lamented that the dog had not fallen on the Duchess, as it might have broken the fall and have saved him. I suggested that it might have killed the Duchess. "Well!" said Bell, "I d-don't know the D-d-duchess, and I d-d-did know my d-dog."

For pure quaintness on the spur of the moment, another remark of his takes a lot of beating. He was driving his beautiful white Hispano very fast up Fitzjohn's Avenue on his way to Hendon, when a motor-lorry came out of a side street. The driver, paralysed by the sight of this white streak apparently about to ram him, stood on his brakes, stopped his engine, and stuck there with half his lorry projecting across the avenue. G. B. slowed down to nothing, crawled gently round the front of the lorry, and remarked, quite conversationally, to the petrified driver: "I d-don't like your n-n-name, and I h-h-hate the way you sp-pell it." Then he opened his throttle and shot away up the hill. His passenger looked round and beheld the lorry-driver, who had dismounted, standing in the road scratching his head, and looking at the name on the side of the lorry, apparently wondering what on earth this curious motorist meant, and only realising vaguely that he had been insulted and had no chance of reply.

Poor old Gordon! With all his faults he was a dear soul—to use his own favourite epithet for those whom he esteemed. The world is a much less amusing place now that he is gone. However, somewhere else is probably the more amusing. He was one of that inimitable little band of scapegrace pioneers of aviation which included Douglas Gilmour, Will Moorhouse, Otto Astley, Jimmy Valentine, Wilfred Parke, Edward Petre, and a few more. If they are all together in the Beyond, life there must be highly entertaining. Wherever he may be one wishes him well.—C. G. G.

GOOD WORK BY THE S.B.A.C.

From time to time it has been pointed out that aircraft firms have been very hardly used by the regulations concerning Excess Profits Taxation. Few, if any, genuine aircraft firms made any profit before the war, yet to their pluck, energy, faith and determination is wholly due the dominance over the enemy held by the R.A.F. to-day.

When the Excess Profit Taxes came into operation the aircraft firms, having no pre-war standard of profit, were only allowed the statutory 6 per cent, or whatever it was, on their capitals, which were absurdly small, and the Government took 60 per cent. or 80 per cent, according to the year, of whatever was left. On the other hand, firms which had been making huge profits out of luxury trades before the war rushed into the Aircraft Industry, and were allowed to make all their pre-war profits, plus the statutory 6 per cent., and only after that did the Government take 60 per cent. or 80 per cent, of what was left over. Yet many of them were making these huge profits, amounting to tens of thousands a year, out of machines built to the designs of firms who, because of their small capitals, were only allowed to make a very few thousands.

It was possible under such an arrangement for the Government to take say, £8,000 out of a small aircraft firm and leave it only perhaps £2,000 for itself, whereas a luxury firm might make £100,000 out of that very firm's machines, and keep the lot.

However, the Society of British Aircraft Constructors recently took up the matter with the Financial Authorities, and the whole question was laid before the Board of Referees, who, having heard all that the S.B.A.C. had to say on the subject, agreed to increase the statutory 6 per cent. to 15 per cent. Consequently the following order has been issued:—

FINANCE (No. 2) ACT, 1915, FINANCE ACT, 1916, FINANCE ACT, 1917.

PART III.—EXCESS PROFITS DUTY.

No. of Case, 149.

AIRCRAFT MANUFACTURERS.

ORDER OF THE BOARD OF REFEREES.

The Society of British Aircraft Constructors, Limited, whose registered office is at 1, Albemarle Street, in the County of London, W.1., having made application under Section 42 (1) of the Finance (No. 2) Act, 1915 (hereinafter called "the principal Act") to the Commissioners of Inland Revenue for an increase of the statutory percentage as respects the class of trade or business hereinafter defined, that is to say:—

> "The business of manufacturing Aircraft (including both heavier than air and lighter than air) and/or Aircraft propellers."

And the Commissioners of Inland Revenue having referred the case to the Board of Referees appointed for the purpose of Part III. of these Acts by the Treasury and the Board having heard the Applicants and the Commissioners of Inland Revenue by their duly-appointed representatives upon the merits of the said application, and having dealt with the case

The Board doth order that as from the commencement of the principal Act the statutory percentage as respects the class of trade or business hereinbefore defined shall be increased:

1. In the case of any trade or business carried on or owned by a company or other body corporate to 15 per cent.;
2. In the case of any other trade or business:—
   (a) for accounting periods ending prior to the first day of January, 1917, to 15 per cent. plus 1 per cent.;
   (b) for accounting periods ending after the thirty-first day of December, 1916, to 15 per cent., plus 2 per cent.; except that for the purposes of sub-section (2) of section forty-one of the principal Act the statutory percentage shall be 15 per cent. plus 1 per cent.;

with the addition, in cases 1 and 2 (b) for accounting periods ending after the thirty-first day of December, 1916, of 3 per cent. for the purposes of sub-section (1) of section forty-one of, and paragraph 4 of Part II. of the Fourth Schedule to, the principal Act.—(Signed) D. M. KERLY, Chairman; J. K. F. CLEAVE; D. DU B. DAVIDSON (Joint Registrars).

The 16th day of July, 1918.

None could describe the treatment of the Aircraft Industry by this order as generous, when one considers how much the aircraft firms have suffered from neglect, and even oppression, in the past. Consequently, although the increase granted is substantial, it is certainly not more than is just and fair.

It is at any rate a recognition of the difficulties attached to the investment of capital in the Aircraft Industry, for obviously no sane investor would put his money into an aircraft firm which was only allowed 6 per cent. on its capital plus his share of the odd 20 per cent. of whatever was left over after paying the 6 per cent., when he could perhaps get 25 per cent. out of a luxury firm which had a high pre-war standard of profit. Now, however, when an aircraft firm is allowed its 15 per cent., and is still allowed its 20 per cent. of what is left, there is a reasonable chance of getting a decent dividend out of aircraft shares, provided (a) that the firm is well managed—which is not by any means always the case—and (b) that the Finance Department of the Air Ministry pays its accounts—which again is not by any means always the case.

At any rate, the Aircraft Industry, as a whole, including all its shareholders, should feel duly beholden to the Council of the S.B.A.C. for having taken up the case and having carried it through to so satisfactory a conclusion.—C. G. G.

A CANADIAN FLYING CORPS.

According to the "Canadian Daily Record" Brigadier-General Hoare, commanding the R.A.F. in Canada, states that he believes a Canadian Flying Corps will be established. The cadets will remain in Canada and will be trained in the use of a new type of aeroplane.

SIAMESE HELP.

According to the "Petit Journal," several squadrons of perfectly trained Siamese aviators are now assembled at Bangkok, where they will shortly embark for France. The contingent represents a voluntary contribution by the Siamese Government.



NAVAL & MILITARY AERONAUTICS



GEOFFREY WATSON

FROM THE "LONDON GAZETTE."

War Office, July 26th.

The King has been pleased to approve of the following awards to the following officers and warrant officers in recognition of their gallantry and devotion to duty in the field:—

The Military Cross.

Sec. Lt. H. W. Collier, R.A.F., Spec. Res.

During recent operations this officer carried out a contact patrol in a thick mist at a height of only 150ft. under heavy machine-gun and rifle fire, and flew daily during the misty weather at low altitudes, bringing back much useful information of the enemy, and harassing them with machine-gun fire and bombs. It was greatly due to his magnificent work that headquarters were kept informed of the enemy's movements during the different phases of the battle. By his gallant and cheerful spirit at a time when the squadron was suffering heavy casualties he set a splendid example to the others.

Temp. Lt. D. G. Cooke, R.A.F.

For conspicuous gallantry and devotion to duty when engaged in many low-bombing patrols and low reconnaissances. On one occasion, when important information was required, he flew along a front of 10 miles at 100ft., being subjected the whole way to heavy fire from the ground, and on the same day along another front of 12 miles at 300ft., each time returning with the information and his machine much shot about. He has destroyed several hostile machines in air combats, and has invariably displayed the highest courage and a splendid fighting spirit.

Temp. Capt. G. M. Cox, Gen. List and R.A.F.

On numerous occasions during recent operations he has descended to very low altitudes and has attacked with bombs and machine-gun fire enemy troops forming up for attack. Thanks to his dash and intrepidity hostile bodies of troops have suffered very severe casualties and have been scattered in all directions. He has in all destroyed four hostile machines, and has at all times displayed the greatest gallantry.

Lt. H. G. Crowe, R. Ir. R. and R.A.F.

For conspicuous gallantry and devotion to duty when taking part in many low-flying bomb raids and reconnaissances as an observer. On every occasion he brought back very accurate and valuable information. On three occasions his machine was shot down by enemy fire, but he continued his work, and his great fearlessness and fine spirit have been an invaluable example to others. He has taken part in several air combats and been responsible for the destruction of many hostile machines.

Temp. Sec. Lt. H. Daniel, Gen. List and R.A.F.

For conspicuous gallantry and devotion to duty in numerous aerial encounters. On one occasion he completely destroyed three enemy aeroplanes on the same day. He has in addition crashed three others and sent down two out of control. He has always displayed the greatest skill, keenness, and courage in aerial fighting, and his services have been of inestimable value to his patrol leader.

Temp. Lt. D. M. Dening, R.A.F.

With a party of men, five of whom had already been wounded, he repeatedly returned to a balloon position, which was being heavily shelled, to save stores and supervise the removal of the balloon. Owing to the roads being under heavy fire he was unable to effect his purpose until the following day, when he went up again, although subjected to heavy fire, and succeeded in getting the balloon and other stores safely away.

Sec. Lt. F. C. Farrington, R.A. and R.A.F.

On several occasions during heavy hostile attacks he has sent down calls to the artillery to engage hostile infantry forming up for attack. Thanks to his skill in discovering enemy formations and to his speed in communicating the requisite information to the artillery, the most severe casualties were inflicted on the enemy, the failure of their attacks being largely due to his splendid work. On numerous other occasions his work has proved of exceptional value, and he has at all times set a magnificent example to all ranks of his squadron.

Temp. Sec. Lt. E. M. Forsyth, R.A.F.

He has on many occasions displayed the utmost courage and fearlessness in bombing enemy troops, and engaging them with machine-gun fire from low altitudes, and in bombing huts and lorries. On one occasion he was sent out to do a special reconnaissance, and flying at a particularly low altitude, and in very bad weather, he successfully obtained the most valuable information.

Lt. (temp. Capt.) R. A. Grosvenor, Dn. Gds. and R.A.F.

For conspicuous gallantry and devotion to duty as a leader of offensive patrols against hostile aircraft and troops on the ground. On one occasion his patrol was attacked from the rear by five enemy scouts. By skilful piloting he manœuvred his machine into position behind one of the scouts, which he shot down in flames. He was attacked again, and drove the scout to destruction. On other occasions he has destroyed and driven down out of control at least eight hostile machines.

Temp. Lt. A. R. Gurney, M.M.G.C., attd. R.F.C.

While attacking enemy troops his pilot was wounded and fainted. He connected up the dual control, but the machine was falling in a spin. However, he got control again at a height of only 500 ft., and got the machine, with its occupants, safely back. He showed great pluck and determination.

Lt. (temp. Capt.) H. J. Hamilton, D. of Corn. L.I., attd. R.A.F.

He has on many occasions displayed the utmost dash and fearlessness in engaging enemy aircraft at close range, and has succeeded in destroying a considerable number. He also attacked with machine-gun fire, and from low altitudes, enemy formations on the ground, and dropped bombs on points of importance behind the hostile lines. He has invariably shown great determination and a fine offensive spirit.

Sec. Lt. L. F. Handford, Lond. R., attd. R.A.F.

On one occasion when on patrol, the machine in which he was acting as observer was attacked from below by four hostile scouts. After he had fired 20 rounds into the nearest scout, the latter burst into flames and crashed in our lines. Despite the fact that he was wounded, and that his gun-mounting was put out of action, he continued to fire the remainder of the drum into another hostile scout, which went down out of control, and is confirmed to have crashed in the enemy lines. The destruction of these two hostile machines was in a great degree due to his gallantry and determination in carrying on with his task under circumstances of great difficulty and danger.

Temp. Lt. R. G. Hart, R.A.F.

On one occasion, when on patrol, the machine in which he was the pilot, was attacked from below by four hostile scouts. Though he himself was wounded, and his machine seriously damaged by the first burst of fire from the enemy machines, he continued to manœuvre his machine so skilfully that his observer was able to send down in flames the nearest hostile scout, and to drive down out of control a second enemy machine. Despite the fact that one enemy plane continued to attack him, he succeeded in landing his machine. The destruction of these two hostile machines was in a great degree due to his gallantry and determination in manœuvring his machine when almost out of control.

Lt. J. A. G. Haslam, R.A., attd. R.A.F.

While on patrol he, with another officer, observed 15 motor lorries. As these could not be engaged by our artillery by zone call, these officers flew 8,000 yards over the enemy lines, at a height of 3,800 ft. in the face of strong opposition from the ground, and dropped four bombs, obtaining direct hits on the lorries and doing considerable damage to their personnel. They then proceeded to attack them with machine-gun fire as they sought cover. A fortnight later they carried out at a height of 150 ft. a reconnaissance of their corps front, on which an attack was expected. Despite the fact that the clouds were at 200 ft., and there was a thick mist, they obtained most valuable information. During this flight they directed and located the fire of our artillery on a concentration of enemy infantry. Throughout the operations their work in co-operation with our artillery was always of the greatest value, and their enterprise in attacking enemy troops and transport with bombs and machine-gun fire was splendid.

Temp. Sec. Lt. G. S. L. Hayward, R.W. Kent R., attd. R.F.C.

On three separate occasions when engaged with large hostile formations he has attacked and sent crashing to earth two hostile machines on each occasion. He has displayed consistent skill, courage, and determination in dealing with hostile aircraft.

Temp. Sec. Lt. W. I. E. Lane, Gen. List, attd. R.A.F.

While on artillery patrol, he was attacked by nine hostile triplanes. He at once opened fire, and shot down one, which fell in the enemy lines. Although seriously wounded in the leg, he continued with the greatest gallantry to engage the enemy, shooting down a second scout, which fell in our lines. Throughout the fight he displayed exceptional skill in handling his machine, and a magnificent determination to get at close quarters with his opponents.

Temp. Sec. Lt. A. Leach, British West Indies R., attd. R.A.F.

As an observer, while engaged on photographic work, he was attacked by five hostile triplanes. After he had fired a burst of 30 rounds at a range of 100 yards, one of the enemy planes went down in flames. Though the remaining hostile planes were reinforced by another 10 machines, and though he himself was wounded, he fired a drum at a range of 150 yards, which resulted in another of the enemy machines rolling over on its side and falling to pieces. By his skill and coolness he undoubtedly saved his pilot and the machine.

Temp. Lt. A. Lomax, R.F.A., attd. R.A.F.

For conspicuous gallantry and devotion to duty on many occasions in bringing back accurate and detailed reports. He carried out five low reconnaissances over the enemy's lines in thick weather, in which most of the flying had to be done at under 500 ft. On four occasions his machine was badly shot about by machine-gun fire from the ground. He also carried out three offensive patrols, using bombs and machine-gun fire against enemy troops.

Temp. Sec. Lt. W. E. MacLean, R.A.F.

During recent operations this officer carried out a contact patrol in a thick mist at a height of only 150 ft. under heavy machine-gun and rifle fire, and flew daily during the misty weather at low altitudes, bringing back much useful information about the enemy, and harassing them with machine-gun and bombs. It was greatly due to his magnificent work that Headquarters were kept informed of the enemy's movements during the different phases of the battle. By his gallant and cheerful spirit at a time when the squadron was suffering heavy casualties he set a splendid example to the others.

Temp. Sec. Lt. L. W. Mawbey, R.A.F.

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lines, on many occasions, he dropped bombs on the enemy personnel, horses, transport, and camps, and engaged enemy troops with his machine-gun from very low altitudes. At all times he displayed a fine fighting spirit and determination to get at close quarters with his opponents which was deserving of the highest praise.

Temp. Capt. D. M. McGoun, R.A.F.
For conspicuous gallantry and devotion to duty as a leader of offensive patrols. It is entirely due to his determination and skill that his patrol has destroyed many enemy machines. His consistent keenness, his gallantry, and untiring energy have at all times set a magnificent example to all the pilots and observers in his squadron. He has personally destroyed many hostile machines, never hesitating to attack, and on all occasions displaying a fighting spirit which has earned the admiration of all in contact with him.

Lt. J. E. Middleton, R.A.F.
He has carried out some extremely good contact patrols in thick weather, flying at 200 to 500 feet. He made two flights on one day. On one, his machine was so badly damaged by machine-gun fire that he had to return. On the other, he made a good report of the situation. On several other occasions he made good reports, and also bombed and machine-gunned the enemy.

Temp. Sec. Lt. J. M. J. Moore, R.A.F., Gen. List.
When on a special reconnaissance under poor climatic conditions he flew below the clouds in the face of exceptionally heavy shell and machine-gun fire and completed his task, returning with intelligence of the greatest value. On a previous occasion while on reconnaissance he attacked four hostile machines and succeeded in destroying one and sending another down completely out of control. His work throughout has been carried out in a most courageous and dashing manner.

Temp. Sec. Lt. J. L. Morgan, R.A.F.
For conspicuous gallantry and devotion to duty when carrying out many low-flying and offensive patrols and engaging enemy troops, transports, etc., with machine-gun fire, and inflicting heavy casualties. On many occasions he attacked and destroyed or drove down out of control hostile machines, and he invariably displayed a dash and determination worthy of the highest praise.

Lt. (temp. Capt.) T. Owen, S Staff. R., attd. R.A.F.
He has carried out many successful low reconnaissances, bringing back good reports. When on artillery patrol, he succeeded in completely disorganising the traffic on a main road, getting direct hits on troops and transport by artillery. On this occasion it is estimated 40 lorries were destroyed. He also attacked enemy troops and transport with bombs and machine guns with success.

Temp. Sec. Lt. J. P. Owen-Holdsworth, Gen. List and R.F.C.
During the last six months he has carried out 52 bombing raids on the enemy lines of communication, their aerodromes, and their rest billets, often flying in very bad weather. Descending to a low altitude he has obtained several direct hits, both on their hangars and their billets. On several occasions he has returned with his machine riddled with bullets. He has set a fine example of courage and determination.

Temp. Sec. Lt. L. A. Payne, Gen. List and R.A.F.
Volunteering to proceed on a special reconnaissance under adverse weather conditions, he penetrated for a distance of nine miles behind the enemy's lines, flying at an altitude of 200 ft., despite the most intense machine-gun and rifle fire. He returned later, his machine riddled with bullets, with the required information. Previous to this he had bombed and engaged with machine-gun fire bodies of hostile infantry with the most effective results. He has destroyed one hostile plane and driven down two others out of control. He has at all times displayed the greatest fearlessness and dash.

Temp. Sec. Lt. J. J. Quinn, R.A.F.
He carried out five low reconnaissances over the enemy's lines, bringing back valuable information, his machine on three occasions being badly shot about by machine-gun fire from the ground. He carried out one offensive patrol and one escort, attacking with bombs and machine-gun fire from a low altitude. On both occasions he was attacked by enemy aeroplane formations, his observer driving one down out of control, and his own machine being much shot about.

Temp. Lt. D. A. Savage, Gen. List and R.A.F.
For conspicuous gallantry and devotion to duty, especially on the following occasions:—When on patrol attacked a formation of enemy aeroplanes, crashing one, while another fell to pieces in the air after a short combat. Attacked an Albatros, which he set on fire, and drove another down out of control. Attacked many ground targets from low altitudes.

Lt. L. H. Short, Durh. L.I., attd. R.A.F.
For conspicuous gallantry and devotion to duty in bringing in many excellent and accurate contact patrol reports, and, owing to adverse weather conditions, having to fly very low. On one occasion his observer was wounded from the ground, and he was attacked by three enemy aeroplanes, but he brought him safely back. On another occasion his observer was wounded when bombing enemy troops from 1,000 feet.

Sec. Lt. E. H. Stanes, R.A.F
On one occasion he carried out at an altitude of between 500 and 700 ft., despite hostile machine-gun and rifle fire, a very comprehensive reconnaissance of railways, roads, dumps, and aerodromes behind the enemy's lines, obtaining information of inestimable value. On a later occasion, while on a photographic reconnaissance, being attacked most persistently by hostile aircraft, he repeatedly drove off the enemy machines, and only returned to his aerodrome when he had obtained the photographs required. His courage and determination were of the highest quality, and the services which he had rendered of exceptional merit.

Lt. L. J. Sweeney, B.C.R., R.A.F.
When leading a bombing raid this officer attacked enemy troops and transport with bombs and machine-gun fire from 500 ft., causing a great many casualties. Although his observer was wounded and his machine badly damaged, he succeeded in landing behind our lines. During two subsequent low flights he caused many casualties, his observer being again wounded and his machine badly damaged.

Lt. J. W. Wallwork, R.A.F.
During recent operations he participated in many offensive low-flying and bombing attacks, and carried them out with great courage and determination. From very low altitudes he bombed enemy troops and transport, inflicting heavy casualties. He caused, while on offensive patrol, more than one enemy machine to crash, and brought down others out of control. He set a magnificent example of courage and skill.

Lt. F. M. F. West, R. Muns. Fus., Spec. Res. and R.A.F.
While on patrol he, with another officer, observed 15 enemy motor lorries As these could not be engaged by our artillery by zone call, they flew 8,000 yards over the enemy lines at a height of 3,800 ft. in the face of strong opposition from the ground, and dropped four bombs, obtaining direct hits on the lorries and doing considerable damage to their *personnel*. Then they proceeded to attack them with machine-gun fire as they sought cover. A fortnight later they carried out, at a height of 150 ft. a reconnaissance of their corps front, on which an attack was expected. Despite the fact that the clouds were at 200 ft., and there was a thick mist, they obtained most valuable information. During this flight they directed and located the fire of our artillery on a concentration of enemy infantry. Throughout the operations their work in co-operation with our artillery was always of the greatest value, and their enterprise in attacking enemy troops and transport with bombs and machine-gun fire was splendid.

Sec. Lt. A. G. Wilson, W. Yorks R., and R.A.F.
For conspicuous gallantry and devotion to duty, flying under most difficult weather conditions and obtaining, under heavy fire, valuable information, which he embodied in a series of excellent reports. On one occasion, when a smoke screen was put up by the enemy, he flew round and made a close reconnaissance from between 500 ft. to 1,000 ft., under heavy anti-aircraft and machine-gun fire.

CANADIAN FORCE.

Lt. W. J. A. Duncan, Rly. Troops, seconded R.A.F.
On one occasion he attacked and shot down an enemy plane which had been engaged at firing on our infantry. He then led his patrol over the enemy's lines, dived down to an altitude of 100 ft., and attacked large numbers of hostile infantry with machine-gun fire, causing the utmost panic amongst them and inflicting heavy casualties His continuous gallantry and initiative have been most conspicuous.

Lt. T. I. Findley, Can. F.A., attd. R.A.F.
On one occasion, under adverse climatic conditions, he carried out, during a flight of three hours at an altitude of 300 ft., a most valuable reconnaissance. During recent operations his work in attacking enemy troops from low altitudes has been of the greatest value, and he has set a splendid example of energy and determination to all ranks of his squadron.

Air Ministry, July 30th.

R.A.F.—The following temp. appts. are made at the Air Ministry:—Staff Officers, 2nd Cl.—And to be temp. Majs. while so empld.:—Capt. P. A. Landry, May 6th; Lt. (temp. Capt.) J. D Smith, July 13th.

The following relinquish their appts:—Maj. J. G. Currie, July 16th; Lt. (temp. Maj.) W. P. Groves, July 18th.

Staff Officers, 3rd Cl.—(Q.) J. A. Heather (Qrmr and Hon. Lt., T.F. Res.) is granted a temp. commn. as Lt., and to be temp. Capt. while so empld., vice Sec. Lt. (temp. Capt.) W. A. Berry, July 9th; Sec. Lt. W. T. Watson, and to be temp. Capt. while so empld., vice Lt. (Hon. Capt.) B. S. Cohen, July 19th. The name of Capt. W. A. Lawrance is as now described, and not as in "Gazette," April 2nd.

The following temp. appts. are made:—Staff Officers, 1st Cl.—And to be temp. Lt.-Col. while so empld.:—Capt. (temp. Maj.) G. S. Peacock, June 6th; Lt. (temp. Capt.) G. Philippi, M.C., June 19th.

The notification in "Gazette," June 14th, regarding Lt. (temp. Lt.-Col.) D. N. Thomson, M.C., is cancelled.

Staff Officers, 2nd Cl.—And to retain their temp. ranks:—Capt. (temp. Maj.) H. F. A. Gordon, May 9th; Capt (temp. Maj.) C. O. F. Modin, D.S.C., June 5th.

Staff Officers, 3rd Cl.—And to be temp Capts while so empld. if not already holding that rank:—Lt. (temp. Capt.) T. Fawdry, April 1st to June 17th; Lt. F. Jewell, May 27th; Lt. J. T. Kyffin, July 3rd; (Q.) Sec. Lt. (temp. Capt.) W. A. Berry, July 9th

Flying Branch.—To be temp. Lt.-Col. while empld. as Lt.-Col. (A. and S.):—Maj. D. C. S. Evill, D.S.C., Capt. (temp. Maj.) H. E. M. Watkins, July 17th.

Capt. (temp. Lt.-Col. F. W. Lucas retains his temp. rank while empld. as Lt.-Col. (Dir.) from S.O., July 9th.

Capt. (temp. Maj.) I. Fraser to be temp. Lt.-Col. while empld. as Lt.-Col. (Dir.), July 17th.

Capt. T. A. Batchelor to be temp. Maj. while empld. as Maj. (A. and S.), July 20th.

Lts. (temp. Capts.) to be temp. Majs. while empld. as Majs. (A. and S.):—G. Merton, M.C., May 17th; R. F. S. Leslie, D.S.C., June 19th; J. S. F. Morrison, July 15th; G. E. Livock, July 23rd.

Lts. to be temp. Capts. while empld. as Capts. (A. and S.):—E. J. Webster, June 20th; A. C. Sharwood, June 30th; W. M. Carlaw, R. Harrison, C. Ross, July 14th; V. S. Bennett, J. E Doyle, July 16th; C. R. Keary, July 17th; W. E. M. Whittaker, July 18th; W. C. Carter, J. E. Gurdon (Hon. Capt.) A. H. Pearce, July 23rd.

Capt. F. H. Mardall to be Capt. (A. and S.) from (Ad.), May 7th, seny. April 1st (substituted for notification in "Gazette," July 16th.

Capt. D. G. Young to be Capt. (A. and S.), from (Ad.), May 22nd.

Lt. (temp. Capt.) E. L. B. Buchanan retains his temp. rank whilst empld. as Capt. (Dir.), from (K.B.), July 22nd.

Lt. (Hon. Capt.) R. V. Goddard to be temp. Capt. whilst empld. as Capt. (Dir.), July 22nd.

The following Lts. (Hon. Capts.) to be temp. Capts. whilst empld. as Capts. (O.):—B. A. Malet, D S. Earp, C. N. Downes, June 27th.

Lt. T. G Greenwell to be Lt. (Dir.) from (K.B.), July 22nd.

The following Lts. (Obsr. Officers) to be Lts. (A. and S.):—V H. G. Parker, May 9th; A. Simmons, K K. E. Bonnerjee, May 16th; D. M. Harper, May 19th; T. C. S. Tuffield, L. W. Harman, May 22nd; R. H. Le Lievre, May 25th.

Lt. (Hon. Capt.) E. Burrows to be Lt. (Hon. Capt.), A. and S., from (O.), May 22nd.

Sec. Lt. W. A. Russell to be Sec. Lt. (A. and S.), from (T.), May 9th.

J. J. Tates (Lt., late Gen. List, R.F.C.) to be Sec. Lt. (A. and S.), and to be Hon. Lt., May 10th.

The following Sec. Lts. (late Gen. List, R.F.C, on prob.) are confirmed in their rank as Sec. Lts. (A. and S.):—T. E. Snelgrove, April 16th; C. A. Schiller, April 19th; J. C. J. McDonald, J. M. Dandy, April 25th; F. C. Tanner, April 26th; R. W. Simpson, April 28th; H. F. Banks, April 30th; W. H. Doherty, May 4th; W. J. Brooks, May 7th; T. J. Roberts, May 8th; F. Latimer, R. P. Arliss, W. D. Bryan, May 10th; T. Raines, J. A. A. Barber, May 12th; R. A. Ritchie, D. A. Cobbald, May 13th; H. E. Anderson, C. Taylor, May 16th; R. J. Meyer, C. N. Davies, G. C. W. Dufty, H. H. Reeves, W. Smith, May 17th; B. Rennert, C. S. Rathbone, May 18th; R. F. Hacon, A. A. Schulman, May 19th; A. R. Delay, R. L. Scharff, E. V. Brown, J B. Mawer, S. E. Booth, S. G. Davies, J. M. McLeod, W. L. Roblon, May 21st; F. J. Frape, A. R. MacDonald, J. Sandford, R. R. Macnaughton, May 22nd; G. Burton, G. F. Poole, R. Walker, K. Shanks, May 23rd; F. W. Barnes, J. A. Sherrett, D. McK. Sheridan, May 24th; T. E. Gibbs, W. H. Hopper, L. S. Dare, May 25th; W. Sutcliffe, O. H. Campbell, May 26th; L. C. Phillips, A. G. Boff, May 27th; A. S. Hinde, May 28th; C. B. Hales, R. H. Sanders, May 29th; H. A. Rolls, J. C. Regester, A. F. V. Clark, W. Molineaux, May 30th, F. L. Steggall, May 31st; F. W. G. Goodwin, June 1st; A. F. Millar, June 6th; J. N. Hamman, June 10th; F. W. Long, S. L. Bennett, June 17th; E. A. Siegrist, June 25th; J. F. Kinlock, R. H. French, L. B. Lake, W. A. Spence, June 26th; R. P. McHaffie,

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J. Ditchfield, June 27th; W. Mitchell, July 1st; D. Benzies, L. C. Band, July 2nd; S. T. Stidolph, July 4th; S. C. Millar, July 5th.

The following are granted temp. commns. as Sec. Lts. (A. and S.):—C. J. Towler (Sec. Lt., R. W. Kent R., Spec. Res.); E. A. Johnson (Lt., Cent. Ont. R., C.E.F.), and to be Hon. Lt., May 13th; J. McK. Reily (Sec. Lt., R. Ir. Rif., Spec. Res.), May 14th; N. A. Doggart (temp. Capt., Scot. Rif.), and to be Hon. Capt.; J. H. Ball (temp. Sec. Lt., Yorks L.I.), May 17th; J. Bremner (Sec. Lt., R. Scots, T.F.), May 18th; R. N. Pennington (Lt., Quebec R., C.E.F.), and to be Hon. Lt., May 19th; T. H. Hesketh (Sec. Lt., R.E., T.F.), May 22nd; W. J. Bethune (Lt., Camn. Highrs., T.F.), and to be Hon. Lt.; R. F. W. Sheraton (Sec. Lt., W. Som. Yeo., T.F.), May 23rd; P. G. Hutton (Lt., Lond. R., T.F.), and to be Hon. Lt., May 24th; G. Robinson, M.C. (temp. Lt., Conn. Ran.), and to be Hon. Lt., May 26th; L. Michell, M.C. (Lt., Lond. R., T.F.), and to be Hon. Lt., June 7th; C. B. Rait (temp. Lt., Camn. Highrs.), and to be Hon. Lt., June 17th; J. B. Edwards (temp. Sec. Lt., Manch. R.), July 4th:

D. B. C. Fulton, Prob. Flt. Officer (late R.N.A.S.), is granted a temp. commn. as Sec. Lt. (A. and S.), May 16th.

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (A. and S.); J. B. Badgley, H. J. McLeod, C. B. Rutherford, May 24th; W. D. E. Donaldson, May 25th; H. G. Clappison, R. W. Frost, May 26th; J. A. Sutherland, H. C. Baird, A. K. McGill, T. L. Harding, E. E. Whitley, June 21st; G. McG. Pinkerton, F. W. Wright, June 27th; J. L. F. Creighton, F. W. C. Body, G. H. Grieve, K. J. Bellamy, O. J. Dean, A. L. Lighttowler, I. Duval, R. G. K. Morrison, J. O. Armes, June 28th; H. A. Sutherland, June 29th; S. H. Thornton, July 3rd; H. P. N. Gubbins, F. N. Winskill, H. G. Thompson, H. McD. Keith, F. F. Smith, G. K. Waterhouse, S. M. Morris, A. J. Reith, H. A. Lye, J. E. Greenwell, F. L. Hutchison, July 5th.

J. H. Nickson, Sec. Lt. (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt. (K.B.), July 8th.

C. T. Perrins, temp. Sec. Lt. (attd. R. War. R.) is granted a temp. commn. as Sec. Lt. (K.B.), May 10th.

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (K.B.):—A. McCullough, L. F. E. Smith, July 8th.

Lt. (Hon. Capt.) H. G. Hall, D.S.C., to be Lt. (Hon. Capt.) (Obsr. Officer), from (A. and S.), May 7th.

The following Sec. Lts. (late Gen. List, on prob.) are confirmed in their rank as Sec. Lts. (Obsr. Officers):—A. A. Tigar, April 24th; R. M. Campbell, May 9th; W. S. Spark, June 2nd; O. Bell, B. S. W. Taylor, R. E. Sothcott, June 20th; K. C. B. Wobdman, R. A. C. Brie, June 25th; T. Jamieson, June 28th; E. J. Munson, June 29th; C. G. Pickard, July 2nd; T. K. Ludgate, July 4th.

The following are granted temp. commns. as Sec. Lts. (Obsr. Officers):—H. Merden-Wright, M.C. (Sec. Lt., R.F.A., T.F.), April 2nd; R. J. McNab (temp. Lt., M.G.C.), and to be Hon. Lt.; F. C. de L. Kirk (Lt., Norf. R.), and to be Hon. Lt., April 5th; N. Peters (temp. Lt., Northd. Fus.), and to be Hon. Lt., April 8th; A. H. McLachlan (Lt., Can. Rly. Services, C.E.F.), and to be Hon. Lt., April 13th; H. J. Vickers (Lt., I.A.R.O.), and to be Hon. Lt., April 16th; R. S. Blucke (Lt., Dorset R., Spec. Res.), and to be Hon. Lt., April 24th; J. C. F. Holland (Lt., R.E.), and to be Hon. Lt.; W. Hawk (Lt., D. of Corn. L.I., T.F.), and to be Hon. Lt., April 25th; G. H. A. Hart (Sec. Lt., Shrops. L.I., Spec. Res.), May 2nd; H. E. Simmons, M.C. (temp. Lt., Welsh R.), and to be Hon. Lt., May 3rd; W. Williamson (temp. Sec. Lt., attd. Devon R.), May 5th; G. J. Williams (Lt., Hereford R., T.F.), and to be Hon. Lt., May 6th; E. McEwan (Lt., R.A.), and to be Hon. Lt.; F. H. Sibley (Lt., R.F.A., T.F.), and to be Hon. Lt., May 10th; A. Cumming (Sec. Lt., High. L.I.), May 11th; N. W. Walmsley, M.C. (temp. Lt., Lan. Fus.), and to be Hon. Lt., May 15th; A. L. B. Bennett (temp. Sec. Lt., attd. Hamps. R.), June 2nd; T. J. Keating (temp. Lt., R.F.A.), and to be Hon. Lt., June 3rd; R. S. Hall (Lt., Dorset R., Spec. Res.), and to be Hon. Lt., June 4th; A. L. Jordan (temp. Sec. Lt., M.G.C.), June 5th; C. C. Blizard (temp. Lt., Middx. R.), and to be Hon. Lt.; P. E. Appleby (temp. Sec. Lt., attd. K.R.R.C.), A. G. L. Mullen (Sec. Lt., Durh. L.I., T.F.), June 25th; W. G. Norden (temp. Sec. Lt., R.E.), M. H. Cole (temp. St. Lt., Transvaal and Rhodesian R., S.A. Infy.), R. H. Wetherall (temp. Capt., Northd. Fus.), and to be Hon. Capt., June 28th; S. C. Thornley (temp. Sec. Lt., R. Lan. R.), E. Beale (temp. Sec. Lt., R. Berks. R.), June 29th; F. P. Cobden (temp. Lt., M.G.C.), and to be Hon. Lt., July 2nd.

A. K. Mackereth (Prob. Flt. Officer) (late R.N.A.S.) is granted a temp. commn. as Sec. Lt. (Obsr. Officer), April 4th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers):—W. R. T. Chamberlain, July 6th; C. H. Huntley, J. S. Hutchinson, E. W. F. Jinman, R. L. Kingham, B. Knee, E. G. Lay, W. Learmouth, J. A. Lisle, L. I. Lowthian, W. McKay, R. E. Owen, R. W. Rawley, G. C. Russell, H. J. Copp, H. P. A. O'Mant, C. G. Harding, E. J. Norris, P. C. S. McCrea, D. M. Calderwood, B. J. Malyan, A. P. C. Bruce, J. H. Deas, J. H. Davies, J. Hall, J. G. W. Halliday, July 12th; J. F. A. Segner, July 17th; A. M. Harrison, E. L. Baddeley, A. T. Bower, S. G. Burton, G. A. Faulkner, July 24th; W. D. Coates, R. H. Rawll, R. T. Down, S. H. L. Kelly, July 26th; K. H. Ashton, H. E. Alsford, H. H. Brasche, A. S. Papworth, L. J. B. Ward, July 27th; A. J. Goodship, J. E. Lofthouse, W. H. B. Lamb, R. G. Miller, T. L. Leonard, J. W. R. McPhail, July 30th.

The following Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers):—J. J. Comerford, May 31st; L. Eteson, J. W. Fidlin, F. G. W. Gough, S. J. Griffin, W. Hall, L. T. Hope, T. W. Kelly, H. S. Mullen, J. F. Foggo, C. R. Gage, E. St. C. Harvey, J. Harrington, J. E. Hermon, J. M. Holling, J. N. Kier, E. G. Locke, I. W. McEachran, J. Pugh, W. Smith, C. W. Woodend, H. C. Wood, G. W. Wills, F. B. Robinson, R. Watson, J. J. Ward, H. Hood, F. C. King, A. E. Smith, July 19th; H. Crossley, E. G. Banham, J. C. Barns, R. Buckby, H. C. Shires, D. E. Stephens, J. A. Horner, T. R. Hilton, July 22nd; P. Hinde, D. C. North, T. L. Heaslan, W. G. Campbell, A. R. Macpherson, A. Fairley, A. A. Neilson, L. J. Lavington, F. P. Wheeler, G. D. Churchward, R. W. Rollinson, H. N. Ullyott, M. Nicol, K. S. Hill, E. M. S. Kearney, D. V. Hoskins, R. Lister, S. E. Gillmar, G. I. Thomson, G. Goodall, W. G. D. MacLeenan, R. P. Hicklin, H. R. W. Steele, C. J. A. Guyman, T. A. Thomas, J. N. T. Spence, W. Lowe, R. E. Haestier, A. A. Verity, C. H. Foot, C. E. Whitaker, F. Marshall, G. H. Haslam, July 27th.

Lt. H. W. Padgett (Sec. Lt., R. Lanc. R., T.F.) relinquishes his commn. on ceasing to be empld., June 24th.

Capt. (temp. Maj.) W. H. Wilson relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Maj., July 31st.

Lt. B. W. Broach resigns his commn., and is granted the hon. rank of Lt., July 31st.

Lt. A. M. McTavish resigns his commn., July 31st.

The following Sec. Lts. relinquish their commns., having been found permanently unfit as Pilots or Observers:—J. H. Hewitt, R. McCormack, W. E. Keel, S. P. Seddon, C. H. Ryley, J. H. Brookes, H. J. Ough, J. A. King, W. L. McGregor, W. C. J. Rogers, W. A. Hunt, C. F. Miller, A. Brothers, W. Hayward, A. F. Stevens, E. H. J. Fitch, July 31st.

The surname of Temp. Maj. H. Hemming is as now described, and not as in "Gazette" of July 16th.

The notification in "Gazette" of May 17th concerning F. Lodge is cancelled.

The notification in "Gazette" of July 16th concerning Sec. Lt. J. G. Proger is cancelled.

Administrative Branch.—The following Majs. to be Majs., from (S.O.):—J. M. Boyd, J. St. A. King, April 1st

A. C. Rowden (Lt., R. Suss. R., T.F.) is granted a temp. commn. as Lt., and to be temp. Capt. whilst empld. as Capt., May 11th (substituted for notification in "Gazette" June 18th).

The following are granted temp. commns. as Capts.:—A. E. Irvin (temp. Capt., York and Lanc. R.), May 30th; W. F. Macdonald (temp. Capt., R. Fus.), June 9th; J. L. Lucena (temp. Capt., R.G.A.), June 15th.

The following Lts. to be temp. Capts. whilst empld. as Capts.:—W. H. Lyall, June 1st; G. W. Riley, from (A. and S.), June 6th; G. W. Panter, July 18th.

The following are granted temp. commns. as Lts., and to be temp. Capts. whilst empld. as Capts:—H. W. G. Ripley (temp. Lt., Shrops. L.I.), April 1st; G. H. Puckle (Lt., I.A.R.O.), May 22nd.

J. M. Adams (Sec. Lt., Gord. Highrs.) is granted a temp. commn. as Sec. Lt., and to be temp. Capt., but with pay and allowances of Lt., June 18th.

The following are granted temp. commns. as Lts.:—R. J. Porter (Qrmr. and Hon. Capt., R. Innis Fus.), and to be Hon. Capt., April 27th; H. N. Aston (Lt., York and Lanc. R.), May 28th; J. Milne (Capt., Leic. R.), and to be Hon. Capt., June 12th; W. F. Egerton (Capt., W. Kent Yeo.), and to be Hon. Capt., July 8th; S. G. Lewis (late Hon. Sec. Lt., Gen. List) is granted a temp. commn. as Lt., April 23rd; Capt. H. Dureen reverts to Lt., and is granted the hon. rank of Capt., June 1st; Capt. E. C. Winkley to be Lt. (Hon. Capt.), from (A. and S.), July 2nd.

The following Lts. (A. and S.) to be Lts.:—M. Dodd, July 1st; W. G. Kewley, July 12th; F. H. Austin, July 25th.

Lt. L. V. Nicholson to be Lt., from (O.), July 18th.

The following Sec. Lts. to be temp. Lts. whilst empld. as Lts.:—H. Balls, C. T. Johnson, June 1st.

W. H. D. Phillips (Sec. Lt., R. Marines) is granted a temp. commn. as Sec. Lt., and to be temp. Lt. whilst empld. as Lt., June 26th.

Lt. A. J. Cassidy to be Sec. Lt., and to be Hon. Lt., from (A. and S.), June 13th.

The following are granted temp. commns. as Sec. Lts.:—A. E. Pitcher, June 3rd; H. J. Mordaunt, July 1st; S. C. Addison, July 22nd; B. Rooke-Cowell, July 24th; J. Calderwood, G. Elliott, F. N. Gooding, H. E. Stiles, July 26th.

Capt. V. Hewett relinquishes his commn. on account of ill-health, and is granted the hon. rank of Capt., July 31st.

The following Sec. Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Sec. Lt.:—W. H. Allen, F. le B. Egerton, July 31st.

Sec. Lt. Sir R. N. H. Cunliffe resigns his commn., July 31st.

The date of appt. of Capt. C. H. Frazier is May 11th, and not as stated in "Gazette" May 28th.

The notification in "Gazette" July 23rd regarding Sec. Lt. T. G. Lewis is cancelled.

Gymnastic Staff.—To be Area Superintendents:—Maj. P. Owen, May 29th; Capt. B. T. Metcalfe, May 31st; A. H. A. Gem, M.C. (Lt., Notts and Derby R.), and is granted a temp. commn. as Lt., June 4th; T. Knowles (Lt., Gen. List), and is granted a temp. commn. as Lt., and to be temp. Capt. whilst so empld., Ap. 9th; F. K. Moncur (Lt., Sea. Highrs.), and is granted a temp. commn. as Lt. and to be temp. Capt. while so empld., April 29th.

Technical Branch.—Lt.-Col. A. D. Carden, D.S.O., to be Lt.-Col., from S.O., May 18th.

To be temp. Majs. while empld. as Majs.:—Capt. W. J. C. Brown, Lt. (temp. Capt.) R. H. Nicholson, from K.B.), June 11th.

Capts. (A. and S.) to be Capts.:—K. R. Paterson, May 7th; F. P. Donn, July 11th.

Lt. C. G. Carson to be temp. Capt. while empld. as Capt., April 7th.

Sec. Lt. (Hon. Capt.) A. T. Cranmer to be temp Lt. (Hon. Capt.) while empld. as Lt., July 2nd.

Lt. J. W. Mitchell to be Sec. Lt., and to be Hon. Lt., from (O.), April 3rd.

Sec. Lts. (Admin.) to be Sec. Lts.:—W. G. Willis, June 8th; L. M. Bubier, F. G. Cartman, C. W. Curtis, B. M. Hickman, W. Johnstone, D. A. Willmott, July 8th; H. W. Rigden, B. R. Howell, July 10th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts.:—H. T. Hamblin, April 12th; W. H. Parker, May 1st; H. Jacques, May 3rd; H. F. Robertson, June 13th; A. E. W. Davis, July 8th; H. E. Wiltshire, July 10th.

The following are granted temp. commns. as Sec. Lts.:—H. M. Rootham (Hon. Lt., Staff, for R.E. Services), and to be Hon. Lt., May 16th; R. S. Clifton (temp. Lt., R.E.), and to be Hon. Lt., June 23rd; F. W. Stiles (Sec. Lt., R.G.A., Spec. Res.), July 8th.

Capt. E. H. Fitchew (Lt., R.N.V.R.) relinquishes his commn on ceasing to be empld., July 4th.

Sec. Lt. (Hon. Capt.) J. A. V. Noel (Capt., R.G.A.) relinquishes his commn. on ceasing to be empld., July 24th.

Sec. Lt. E. H Jones relinquishes his commn. on account of ill-health and is granted the hon. rank of Sec. Lt., July 31st.

Lt. J. T. Rossiter resigns his commn., July 31st.

The date of appt. of Capt. H. E. Hickmott to temp Maj., notified in "Gazette" July 23rd, is July 15th.

The notification in "Gazette" May 28th regarding Capt. K. R. Paterson is cancelled.

Medical Branch.—Lt. D. Pennington to be Capt., July 16th.

T. H. James is granted a temp. commn. as Capt., July 29th.

The following are granted temp. commns. as Lts.:—J. P. Hosford, July 5th; C. Duggan, A. St. J. Hennessy, E. H. L. Le Clezio, O. S. Martin, O. P. Turner, July 29th.

Memoranda.—F. G. Willock, D.S.O. (Lt.-Col., R.A., T.F.) is granted a temp. commn. as Lt.-Col., and to be temp. Brig.-Gen. while empld. as Comdt., July 25th.

H. J. Corin (Dental Surg., R.N.V.R.) is granted the hon. rank of Maj., July 31st.

Lt. E. J. Smyth to be temp. Capt. while empld. as Liaison Officer, July 31st.

E. A. Willder to be temp. Hon. Lt. while empld. as Asst. Inspr., Aeronautical Inspection Dept., April 1st.

Lt. J. N. Clark to take rank and prec. as if his appt. as Lt. bore date June 26th.

The following relinquish their commns. on ceasing to be empld.:—Lt. R. F. Berrill (Lt., R.F.A.), July 1st; Sec. Lt. (Hon. Lt.) E. A. Walmsley (Capt., R. W. Surr. R.), July 8th.

The appt. to a temp. commn. as Lt.-Col. of J. M. Fraser (Capt, R.N.V.R.) is cancelled.

The notification in "Gazette," July 23rd, regarding Lt. H. Pooley is cancelled.

War Office, August 2nd.

REGULAR FORCES.—Establishments.—R.F.C.—Mil. Wing.—Instr. in Gunnery (graded as an Equipt. Officer 1st Cl.).—Capt B. B. J. A. O'Donnell, M.C., R. War. R., T.F., from an Asst. Instr. in Gunnery (graded as an Equipt. Officer, 2nd Cl.), March 10th.

(Continued on page 507.)

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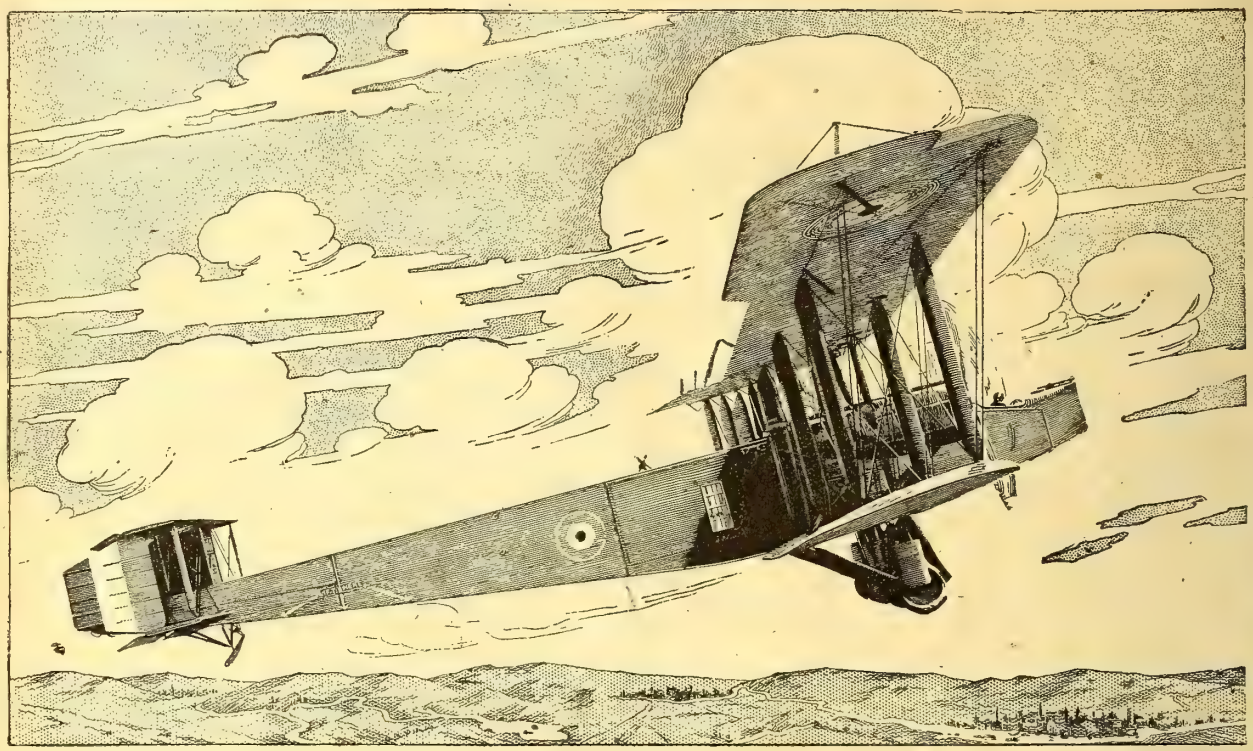
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A GERMAN REPORT ON THE 300 H.P. DE HAVILLAND IV. BIPLANE.

BY A NEUTRAL CORRESPONDENT.

Various German comments on captured Allied aircraft similar to those issued by the Technical Department of the Department of Aircraft Production, Ministry of Munition, of German captures have from time to time been rendered in their standard form. The following is an article by the well-known German writer on aerial matters, Engineer Roland Eisenlohr, translated from the German aero-journal "Luftfahrt" (Aviation) June last :—

Among the newest English long-distance patrol aeroplanes the de Havilland IV. biplane forms one of the most interesting models. For so far very few two-seater designs have altogether been turned out with a 300 h.p. plant, as the British efforts seem undoubtedly to strive at a limitation of the variety of aeroplane types employed at present.

The 300 h.p. motor is of the Rolls-Royce type, having 12 cylinders in two V-shaped rows of six cylinders each. Even though the mounting of the engine is of fundamental importance for the whole fuselage form of an aeroplane, a standard shape of the body in all aeroplane types has settled in England pretty independent of the motor, with which we will deal at some length here, leaving the rest of the design for the time being for later comment.

Fuselage Forms.

First the small beam of the English aeroplane bodies is astonishing, scarcely any fuselage being found any more to surpass the breadth dimension of 730 millimetres. But not only this measure is astonishing small, even the height of the body longi-

THE D.H. IV BIPLANE
(Drawn by the Enemy).

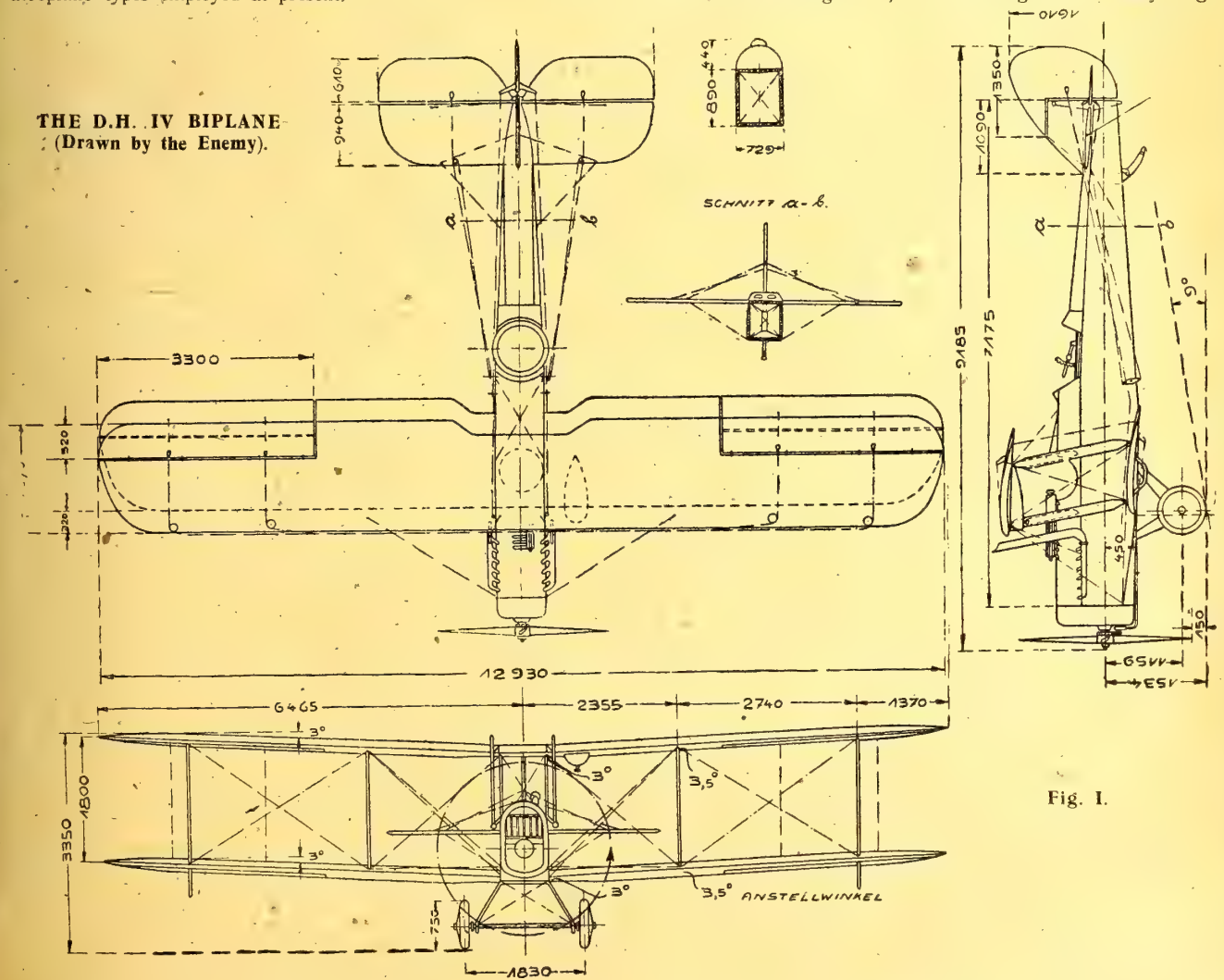


Fig. I.

tudinals is too. (See scale drawings 1.) At the highest point, about the pilot's seat, the fuselage is 880 mm. in altitude.

Forward it thins but little below the motor mounting, while the upper and lower longerons of the body approach each other to a distance of 305 mm. at the back stem.

The fuselage side walls run quite parallel till behind the observer's seat, that is more than half of the length of the fuselage. They are then led somewhat towards each other behind it and rather much in the back end, till the body ends in a vertical back stem. Wood (oak (?) and spruce) is used exclusively, diagonal wiring not starting till behind the cockpit of the observer, as the fuselage has plywood side clothing so far, 3 mm. thick.

Fuselage Struts.

The interstruts of the front part of the body are easily seen in the scale drawings. All of them are made of very strong plywood (up to 26 mm. thickness, 13 parts) and made light by the drilling of holes in the best-to-be-thought-of-way. Not to have the result of too high a charging of thin struts resting in the glueing grooves equal screws are carried through the plywood over the whole rib.

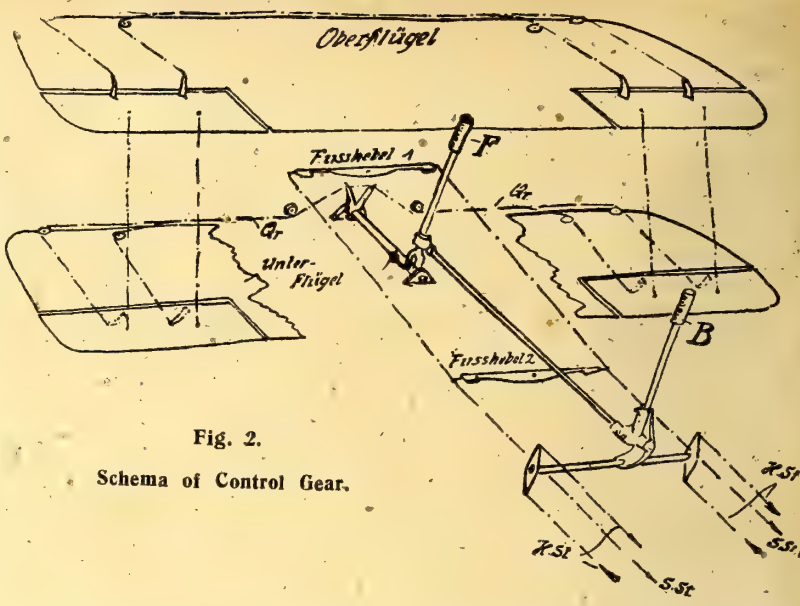


Fig. 2.

Schema of Control Gear.

It is thought a question here whether the weight of the screws could not have been turned to better account by a more solid use of plywood struts and perhaps only to have glued the thinnest points with a fabric winding.

To stand the charge of the landing gear in the body strong sleepers (i.e., cross-members) are arranged over the ends of the chassis struts, which serve also to carry the steering arrangement. Similar lighter sleepers are arranged in the pilot's cockpit to carry there the auxiliary steering, the floor and the turnable observer's seat.

Dual Control.

Here we have to comment on a special feature of all new English two-seater aeroplanes, as we find in them a complete dual command, and thus arranged in this way that the elevator manipulators are led from the pilot to the observer by means of rods and the cables then start first in the observer's cockpit.

Thereby it is noteworthy that both the small levers and the whole cabling are placed outside the body.

As in the case of the elevator command all the wiring of the rudder is also arranged outside the fuselage. The footbars are in their ends provided with prolonging pieces, which go through the fuselage wall and carry the steering cables on the outer side. We will report of the leading of the rudder wires later.

Engine and Airscrew.

The low building of the fuselage skeleton demands pretty high engine-mountings, which are half as high as the body skeleton in the highest place.

The motor with the usual low height caused by the V position of the cylinders is encowled so much in the body that the exhaust tubes get just free of the upper fuselage longitudinals.

The four-bladed airscrew has a diameter of 2.66 metres, and is provided with a reduction gear, transforming the 1,650 r.p.m. to 990. The gear is placed below the crank-shaft, yet allows a low arrangement, owing to the small propeller diameter.

Accommodation.

The pilot sits fairly in the point of gravity, having a fixed machine-gun in front of him. Owing to the narrowness of the body the cutting in the fuselage fairings are, both at the pilot's and the observer's seats, extended to the fuselage longitudinals, which influences, undoubtedly, fairly unfavourably, the passing of the air.

To be able to drop the diagonal wiring between the cabane struts of the upper planes, and thus facilitate the entrance of the pilot, the wire is led once to the motor mounting forwards and then backwards to the observer's seat.

As is always the case, the ring of the machine-gun is arranged turnable, and provided with a raising equipment. In front of and behind the ring the body fairing is raised a little to serve as wind-shield. Running thin pretty sharply, the body ends in a vertical hind edge, in front of which it carries a sprung skid.

The radiator of the 300 h.p. Rolls-Royce engine is placed in the front of the fuselage over the propeller reduction gear. The exhaust branches of the two cylinder rows are gathered to two chimney-like tubes, which are led above and supported to the upper planes.

Wings.

The planes are of little V-shape and none of arrow, the area amounting to 40.3 sq. m. (upper planes 20.7; lower ones 19.6). The aerofoil is very peculiar, inasmuch as the rib height changes only very little between the main and rear spars, there against getting thin very quickly forward and backwards. The leading edge is led over the ribs, while the trailing edge is again raised a little, the total result being thus a double S. The spars have I section. In spite of the not very great height the cross-heads have only a height of 11 millimetres, with a beam of 53 mm., the stem being 9 mm. thick.

Above the fuselage lies a canopy (or centre section) of the same beam as the body. The dimensions of the inner struts of 42.5 × 155 mm. are considerably larger than the outer ones of 28.5 × 108. The relations of length and beam of these strut sections is: 1 to 3.65, being thus considerably more slender than usual with us. Even the centre section struts of 26.5 × 95 mm. show the same relation in section of length and beam.

Ailerons.

Both top and lower planes are provided with ailerons at their ends, having no balance surfaces. They are governed in this way that each time the aileron cables manipulate on the top planes respective lower ones, the two ailerons being mutually connected from above and downwards by means of two profile wires, corresponding with the dual aileron levers. Curiously enough, the ailerons are, as already mentioned, provided with two levers, though they have only a length of 3.3 metres. It appears that they have not made the spar of the ailerons capable of standing torsion to save weight, and thus have preferred to use double the number of levers. The whole system of lateral control does not fulfil German requirements at all.

Only the lower ailerons are connected with the joystick, while the top ailerons have a mutual direct connection, the cables being led over rollers in front of the leading edge from one aileron to the other. Thus 10 direction-changing rollers are needed in the whole aileron system, wherein no attention at all has been paid to the providing of a safety arrangement lest the dropping of one aileron, owing to a wire-break, should result in a complete failure of the aileron system.

Rudder and Elevator Controls.

Against the not very satisfactory arrangement of the aileron control stands a good solution of the elevator and rudder manipulation. The schema sketch shows the way of the control arrangement. The fundamental idea has been to provide for a perfect double control. We see the two elevator joysticks connected by a rod, while the appertinent wire levers operate to both sides of the fuselage, sitting on a through-running shaft.

The control wires lie in their total length outside the body covering and cross at the leading edge of the tail-plane, the latter being fixed to the body end that the angle of incidence can be changed within the limits of + 2 deg. and — 3 deg. by the pilot. Though being thus smaller than usual elsewhere, in English practice they will not quite drop the change capacity. Efforts striving to this end have not been observed in Germany so far.

Attached to the tail-plane of 4.22 m. beam is a divided elevator, each part of which has the lever arranged in the middle. This, too, appears to have been arranged with the object of saving weight by the employment of a thin shaft, as the idea is always else to strive at placing the elevator levers inside the fuselage. The thin inner spars of the elevator and the tail-plane necessitates a double wiring to the top edge of the tail-plane.

Even the cables of the rudder control lie outside the fuselage. The footbars carry to this end a prolongation which penetrates through the body wall and by means of which the steering-wires operate respectively the cables of the front and rear footbars.

The rudder completes with its stabilising surface the fin to a rounded form and has too the lever fairly in the middle of its shaft. Thus here, too, only a small torsion effect results and allows a light building of the inner construction. Curiously enough single rudder wires are only provided, standing in no

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relation to the employment of a complete dual control. We note here a similar insufficiency of the arrangement as above in the aileron control, not corresponding with our ideas.

The rudder and elevator surfaces themselves offer no peculiarities, showing the usual form employed in England of pretty large beam by small chord and having strong roundings. The tail surface has a symmetrical aerofoil and its lower wiring pushed much forward, probably to take the increasing front pressure by the augmenting of the angle of incidence.

The large size of the levers on the rudder must also be mentioned and is explained thereby that the footbars, owing to their prolongation by a normal reduction relation, need too a prolongation of the rudder levers, compared with the otherwise usual dimensions.

The Undercarriage.

The landing chassis consists of two knee pieces, made of solid wood. The section of the two joints are 32 mm. × 130 mm. at the ends, 32 mm. × 200 mm. in the middle and are provided with a fabric covering. The wheel axle rests in a drop-like streamlining, which is worked out by the solid connection parts between the two knees. A diagonal wiring is only arranged in the level of the front chassis struts. As already mentioned the small diameter of the four-blade propeller allows a low landing gear design. To avoid thereby the touching of the ground of the planes wooden skids are placed below the joint points of the farthest struts.

In the wiring of the planes the hitherto usual British practice of dual pull cables was dispensed with, in return a drag wiring being employed both in the upper and lower planes, attaching to the lower longitudinal at the nose of the fuselage.

Though patrol aeroplanes, equipped with 300 h.p. motors have only passed through a short period of development, the de Havilland IV. tractor biplane is yet remarkable in many respects. It appears, too, to have fulfilled the expectation well at the front. There is no reason for commenting upon the arrangement of the seats, fuel tanks, etc., as every detail is evident from the scale drawings.

THE DE HAVILLAND V. SINGLE SEATER.

This modern British aircraft has now to be dealt with in the standard German description, the following being a description from the technical German aero paper, "Zeitschrift für Flugtechnich und Motorluftschiffhart" ("Journal of Aviation and Aerodynamics"), reading to the following effect:—

The aeroplane in question was manufactured by the Darracq Motor Engineering Company, Ltd., in London, and carries the recognition mark: A9435.

It is a single-pair-strutted biplane, the upper planes of which are staggered 0.695 metre backwards.

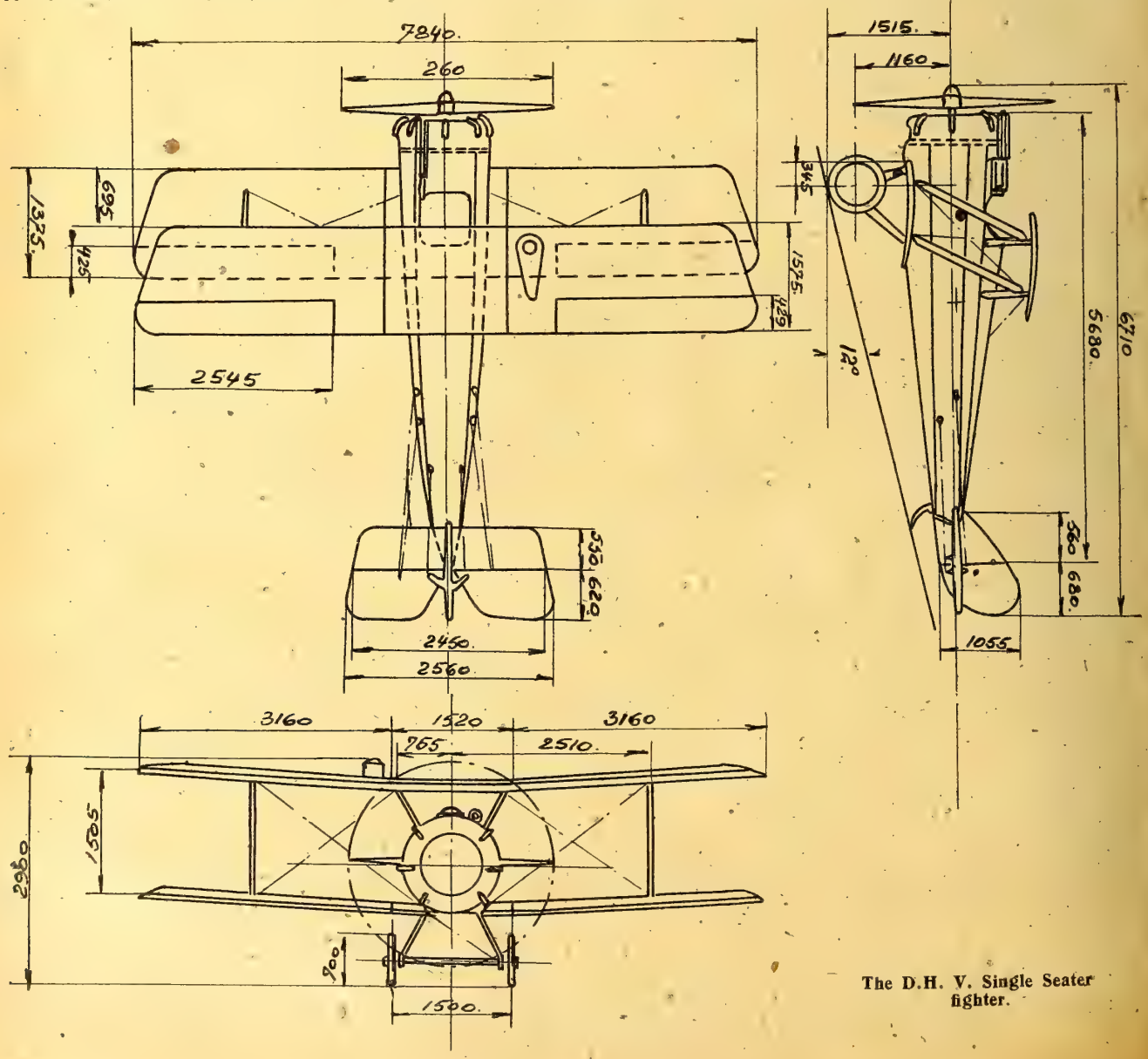
Both planes have a span of 7.84 by a chord of 1.375 m. The upper planes are mounted to a canopy (centre-section), the lower ones to rudimentary pieces at the height of the bottom body longitudinals.

The V-position (dihedral) of the planes amounts to 172 deg.; there is no arrow shape.

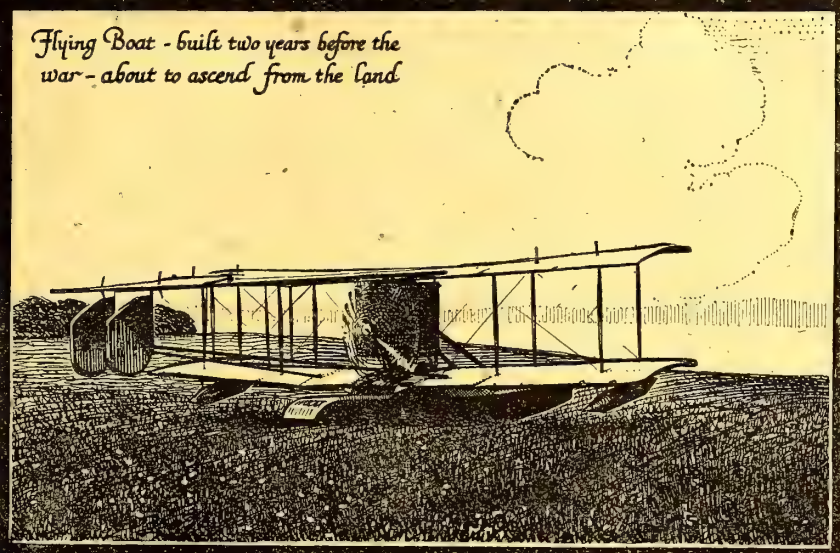
The angle of incidence of the upper plane is 2 deg. by the centre section, 2½ deg. at the end, that of the lower plane 2½ deg. over all.

The spruce spars have I-shaped section.

The distance between the ribs amounts to 280-350 millimetres. Between each two ribs on the suction side, two further auxiliary ribs are arranged from the leading edge rib to the main spar. The struts are made solid of spruce.



The D.H. V. Single Seater fighter.



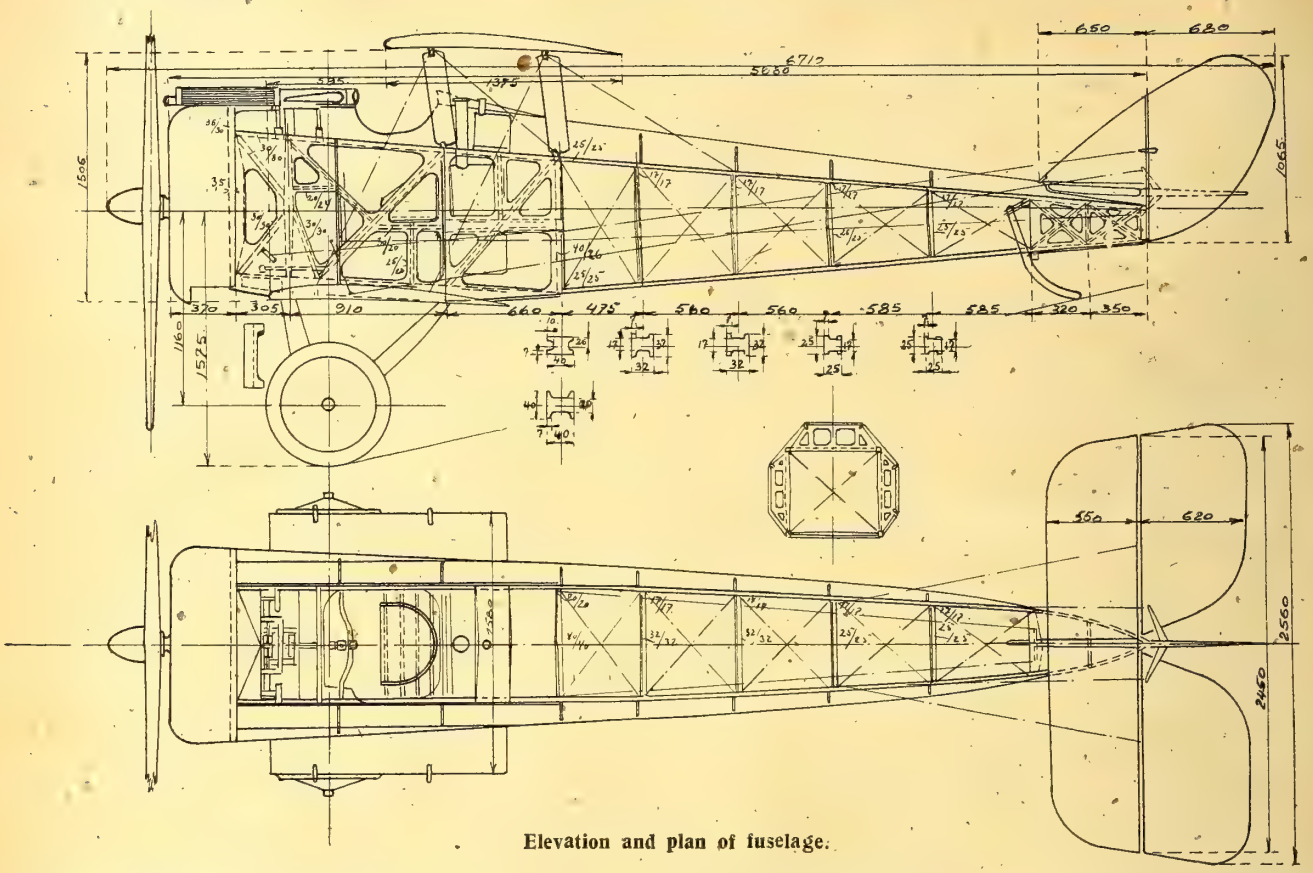
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Elevation and plan of fuselage.

Load sustaining and opposed cables are made of profile wire in single arrangement.

Ailerons are attached to all four planes at the back spar. Their governing wires run outside the planes, below in front of the leading edge rib, above over the front spar. The corresponding ailerons are connected by profile wires.

The normal wire cum wood body fuselage, with four longitudinals, is strengthened in front till behind the pilot's seat, and behind below the fixed tail-plane by the planking of plywood of 3 mm. thickness.

By the mounting of fairings the body attains in front almost circular shape from the pilot's seat.

The fuselage is covered with canvas.

The solid wooden non-covered landing gear struts are of streamline section. The through running axle rests between two auxiliary streamlined covered ones. There is no limit of the spring effect range.

The through-running tail plane rests fixed on the body-end with an angle of incidence of 1 deg. without the hitherto usual angle of incidence change arrangement.

Each part of the divided elevator is provided with levers with single governing cables.

The engine is a 110 Le Rhône rotary, which has given 130 h.p. by earlier tests.

The main petrol tank of a capacity of 100 litres and the oil tank of a capacity of 21 litres are mounted behind the pilot. Further, a gravity tank of 26 litres' capacity is placed on the right upper plane.

The petrol supply from the main tank takes place by means of compressed air, produced by a small propeller air-pump, fixed on the left landing gear strut. The petrol store suffices for a flight of about 2 hours' duration.

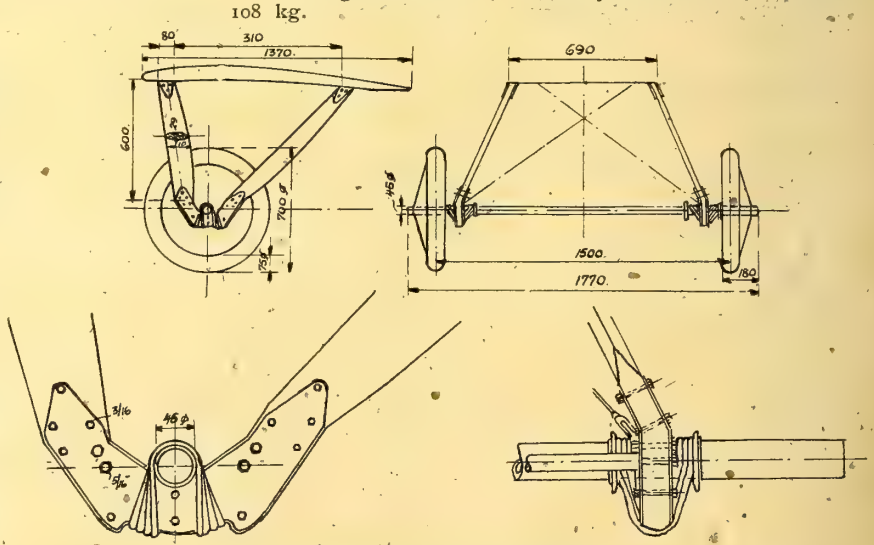
In the pilot's seat are arranged the instruments. To the right of the pilot: The two petrol-supplying tubes with stop cocks; the change arrangement for a spring relief of the elevator management. In the middle: Tachometer, speedometer, altimeter, contact-breaker, watch and compass. To left: Gas and petrol regulation; hand air-pump.

Two further aeroplanes of the same type, which were manufactured by the Aircraft Manufacturing Co., Ltd., in London, show a considerably more convenient arrangement of the instruments, and are further provided with electric light for night flying.

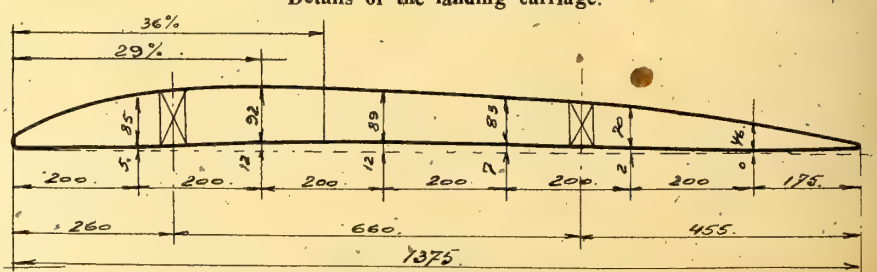
The aeroplane is armed with a fixed machine-gun of the Maxim type (usual army model with the up-placketed jacket), mounted on the top of the cockpit to the left side of the pilot's seat. There is hydraulic control and release by means of Bowden wire. From remains found in the fuselage it could be ascertained that the cartridge belt is a metal one. The belt-box lies below the machine-gun direct behind the motor.

The empty weight of the aeroplane worked out at 461 kilos.

The weight of the fuel, with fully loaded tanks, amounts to 108 kg.



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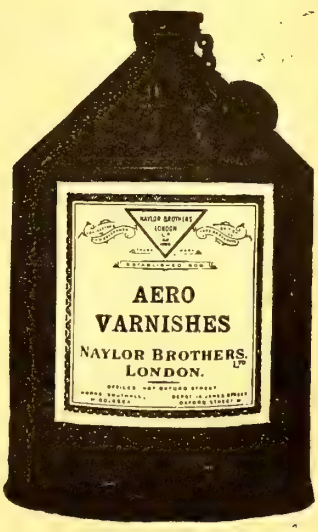
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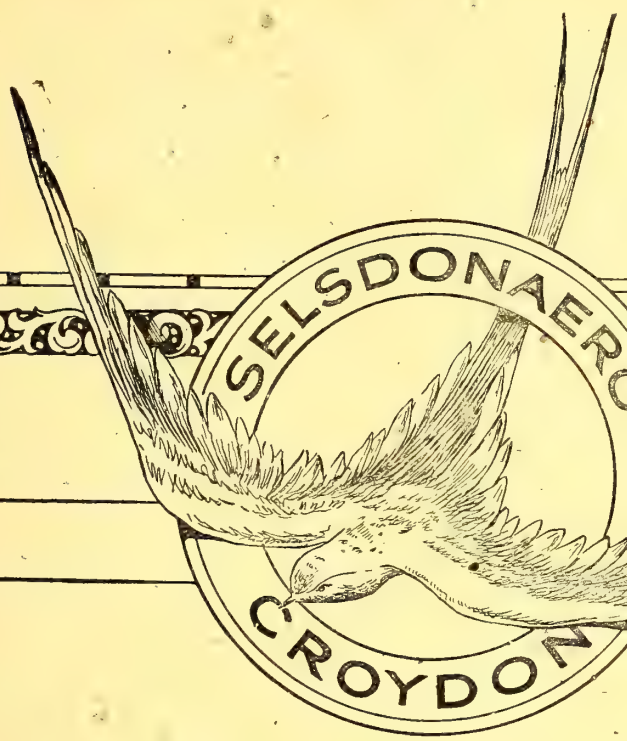
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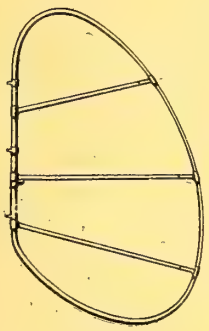
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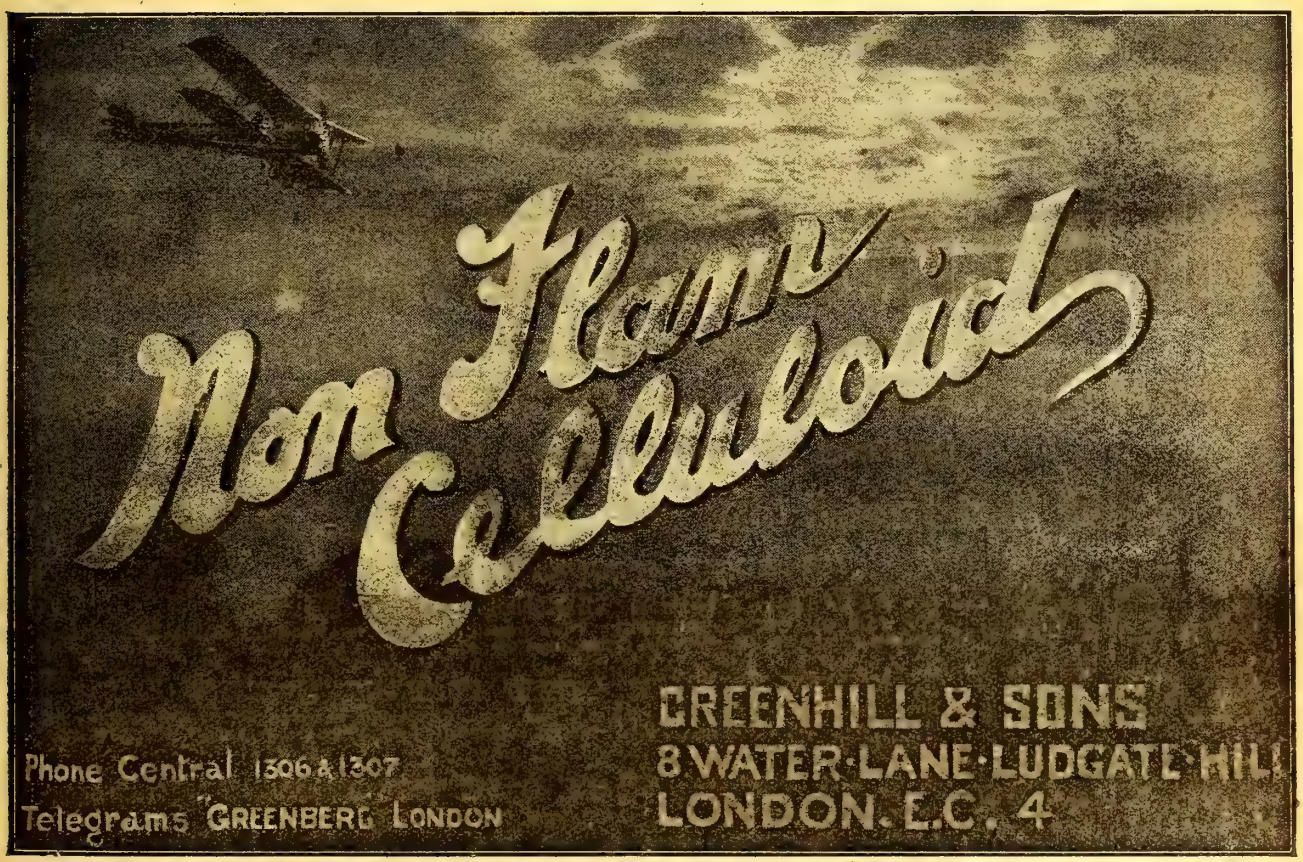
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The Regent Carriage Co., Ltd., 126/132, New King's Road, Fulham, S.W.6. "Carbodis, London." Putney 2240-2241.

Roe, A. V., & Co., Ltd., Manchester. "Triplane, Manchester" City 8530-8531, Manchester.

Saunders, S. E., Ltd., East Cowes, I.O.W. "Consuta, East Cowes." Cowes 193.

Short Bros., Rochester, Eastchurch and Whitehall House, S.W. "Tested, Phone, London." Regent 378.

Sopwith Aviation Co., Ltd., Kingston-on-Thames. "Sopwith, Kingston" Kingston 1988 (8 lines).

Standard Aircraft Manufacturing Co., 28, Bow Common Lane, E. East 2823.

Tarrant, W. G., Byfleet, Surrey. "Tarrant, Byfleet." Byfleet 1, 2 & 3.

Thames Aviation Works, 141, Curtain Rd., E.C.2. London Wall 9766.

Vickers, Ltd., Imperial Court, Basil Street, Knightsbridge. S.W.3 "Vickerfyta, Knights, London." Kensington 6810.

Waring & Gillow, Ltd., Hammersmith. "Warisen, Ox, London." Museum 5000.

Westland Aircraft, Yeovil. "Aircraft, Yeovil." Yeovil 129.

White, J. Samuel, & Co., Ltd., East Cowes. "White, East Cowes." Cowes 3.

Whitehead Aircraft (1917), Ltd., Richmond, Surrey. "Whitecraft, Richmond, Surrey." Richmond 1780-1.

Wycombe Aircraft Constructors, Ltd., High Wycombe, Bucks. "Aircraft, High Wycombe." High Wycombe 84.

Airships—

Airships, Ltd., High Street, Merton. Wimbledon 1314

Short Bros., Rochester, Eastchurch, and Whitehall House, S.W. "Tested, 'Phone, London." Regent 378.

Aluminium Castings (Sand and Die)

Coan, R. W., 219, Goswell Road, London, E.C.1. "Krankases, Isling, London." City 3846.

Bent Timber Parts—

Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496.
Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough" Market Harborough 13.

Bearings (Etonia Cast Phosphor Bronze)

Yorkshire Engineering Supplies, Ltd., Wortley, Leeds. "Yes, Leeds." Central 3927.

Blowpipes (Oxy-Acetylene)—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic. 4830.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Vic. 3540 (3 lines).

Brass Sheets for Tipping Propellers—

Pritt & Co., 46, Fenchurch Street, London, E.C.3. "Poetry, Fen, London." Avenue 995, 996, and 7996.

Buildings—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey. Wimbledon 1313.

Rubery, Owen, & Co., Darlaston, South Staffs.

The Wilfley Co., Ltd., Salisbury House, London Wall, E.C.2. "Wrathless, 'Phone, London." City 2681-2.

Cable Coverings and Cable Controls—

The Bowden Brake Co., Ltd., Tyseley, Birmingham. "Bowden, Acock's Green." Acock's Green 103 & 104.

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Carburettors—

Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2 Victoria 4670.

Casein—

Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C. 3. "Suricodon, Fen, London." Avenue 34 and 35.

Celluloid (Non-Flam.)—

Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London." Central 1306-7.

Clothing—

Burberry's, Ltd., Haymarket, S.W.1. Regent 2165.

Dunhill's, Ltd., Euston Road, N.W.1. "Dunsend, London." North 3405-6.

Coloured Rags—

Joseph, A., Earl Street, London Road Southwark, S.E.1. "New Mongo Sedist, London." Hop 83, 361, 4272.

Component Parts—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (4 lines).

Central Aircraft Co., High Road, Kilburn, N.W.6 "Aviduction, Phone, London." Hampstead 4403 & 4404.

P.D.V. Aircraft Co., Ltd., Princes Street, Richmond. "Aeros, Richmond" Richmond 1681.

Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros., Bilston." Bilston 10.

Cords, Tapes, and Threads—

MacLennan, J., & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Dopes—

British Aeroplane Varnish Co., Ltd., 166, Piccadilly, W.1. "Tetrafree, Piccy, London." Gerrard 2312.

British Cellulose Co., 8, Waterloo Place, S.W.1. "Cellutate, London." Regent 4046.

The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.

Cellon, Ltd., 22, Cork Street, London, W.1. "Ajawb, Reg, London." Gerrard 440.

Clark Ingham, Robt., and Co., Ltd., Walter House, Bedford Street, Strand, W.C.2. "Pearline, Westrand, London." Regent 3923.

Engines and Parts—

Allen, W. H., & Co., Ltd., Bedford. "Pump, Bedford." Bedford No. 1.

Arrol-Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.

The Beatty School of Flying, Ltd., The Broadway, Cricklewood, N.W.2. Hampstead 3000.

Engines and Parts—

Beardmore Aero Eng., Ltd., 112, Great Portland Street, W.1. "Beardmore, London." Gerrard 238.

Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W.1. "Aeroflight, Vic, London." Vic. 7026.

Gordon Watney & Co., Ltd., Weybridge. "Mercédès, Weybridge" Weybridge 550 (7 lines).

Green Engine Co., Ltd., Twickenham. Richmond 1203.

Gwynnes, Ltd., Hammersmith, W. "Gwynne, Hammersmith." Hammersmith 1910.

Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London." Gerrard 8926.

Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1654-5-6.

Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton." Wolverhampton 985.

The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1. "Elevenfold, London." Walthamstow 408 (2 lines).

Electrical Accessories—

Belling & Co., Montagu Road, Upper Edmonton, N.18. "Belling, Edmonton." Tottenham 1984.

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.

Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Euston road, London." Museum 70.

Premier Electric Heaters, Ltd., 258, 259, and 360, Bradford Street, Birmingham. "Fahrenheit, Birmingham." Midland 981.

The Rotax Motor Accessories Co., Ltd, Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Electric Cables—

E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 24x.

Johnson & Phillips, Ltd., Charlton, London. S.E.7. "Juno, London" Central 2207; London Wall 1564.

Electric Lighting and Power—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.

Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Euston road." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—

W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines).

Enamel—

Silica Enamel Co., New Cross, London, S.E.

Flare Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flexible Shafts—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Fluxes—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools—

Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton." Bournemouth 1160.

Cambridge School of Flying and Aerodrome Co., 308, St Andrews Street, Cambridge. "Carbon, Cambridge." Cambridge 5 and 1086.

Furniture (Office)—

Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2. London Wall 573 and 6179.

Galvanising—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

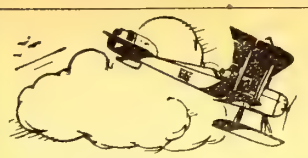
Gauges—

J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17.

Gears—

Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham. "Mosgear, Birmingham." East 407.

· Buyers' · Guide.



Glue—
Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Bececolin, Cannon, London." City 1206.
Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Wapp, London." Avenue 3178.
Meudine Co., 8, Arthur Street, E.C. Bank 5873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3.

Goggles—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Hack Saw Blades and Machines—
Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880.

Heating and Ventilating—
Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 372 (2 lines).
Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).

Hollow Spars—
McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718.

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1308.

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17. "Aneroid, Phone, London." Walthamstow 180.

Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London. "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1. "Vicksmag, Phone, London" Museum 430.
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry." Coventry 1008-1009.

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham. "Clifford, Birmingham." Central 42-43. Avenue 1432.

Metals in General—
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.
Pritt & Co., 46, Fenchurch Street, London, E.C.3 "Poetry, Fen, London." Avenue 995, 996, and 7996.
Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London." City 6342.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4959.
Aircraft Supplies Co., Ltd., Ascol House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton 1041.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3. Avenue 1432.
Lombard Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).

Metal Parts and Fittings—
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing. Eusroad, London." Museum 70.
Mountford, Fredk., Lt., Lifford, Birmingham. "Fremo, Birmingham." King's Norton 261.
Rubery Owen & Co., Darlaston, South Staffs.
Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston." Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford." Keynsham 21.

Metal Spinnings—
Arnold & Sons, Lawrence Road, Tottenham, N.15.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.
Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith "Frodobrake, Birmingham." Central 793.
MacLennan, J., & Co., 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines)

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames.
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2 "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London." London Wall 3266-3267.

Pattern Making—
Fredk. Ward, 6, 7 and 8, Allsop Street, Upper Baker Street, W. Padd. 4743.

Piston Rings—
British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.

Plating, Nickel Silver and Electro Tinning—
Arnold & Sons, Lawrence Road, Tottenham, N.15.

Power Presses and Dies—
Bliss, E. W., & Co., 2a, Pocock Street, Blackfriars Road, London, S.E.1. "Blissdon, London." Hop. 4340.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames. "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104.
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." 24214 Leeds.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil. Yeovil 129.

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth. Redditch. "Inventors, Redditch." Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).
Gosport Aircraft Co., Gosport. "Flight, Gosport" Telephone No. 217.
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Southampton 1337.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds. Leeds 21953.

Searchlights & Landing Lights—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Arnold & Sons, Lawrence Road, Tottenham, N.15.
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 650.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London." Vic 4830.
Arnold & Sons, Lawrence Road, Tottenham, N.15.
British Metal (Kingston), Ltd., Kingston-on-Thames [Staffs
Rubery Owen & Co., Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
Arthur Hill & Co., Silchester Road, North Kensington, W. Park 1443.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

BUYERS' GUIDE cont. on next page.



The · Aeroplane ·

Acceptance and Experimental Flights—
The Prodger Isaac Aviation Co. "Aeromnia, Piccy, London" Gerrard 278 (2 lines).

Acetylene Welding Plant—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Aeroplane Manufacturers—
Aircraft Manufacturing Co., Ltd., Hendon. "Airmanship, Hyde, London." Kingsbury 220.
Armstrong, Sir W., Whitworth & Co., Ltd., Newcastle - on - Tyne "Armstrong Aviation, Newcastle-on-Tyne." Gosforth 500.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich" Norwich 851.
British & Colonial Aeroplane Co., Ltd. (The Bristol Co.), Filton, Bristol. "Aviation, Bristol." Bristol 3006.
British Caudron Co., Ltd., Broadway, Cricklewood, N.W.2. "Caudroplan, Crickle, London." Hampstead 4551.
Central Aircraft Co., High Road, Kilburn, N.W.6. "Aviduction, Phone, London." Hampstead 4403 and 4424.
Davidson Aviation Co., Ltd., Hammersmith, W.6. Hammersmith 1992 (3 lines).
Dawson, John, & Co., Ltd., Newcastle-on-Tyne. "Dependable, Newcastle-on-Tyne." Central 2604 (2 lines).
Eastbourne Aviation Co., Ltd., Eastbourne. "Aircraft, Eastbourne" Eastbourne 1176.
Grahame-White Aviation Co., Ltd., London Aerodrome, Hendon. "Volplane, Hyde, London." Kingsbury 120.
Handley Page, Ltd., 110, Cricklewood Lane, N.W.2. "Hydrophid, Crickle, London." Hampstead 7420
Hooper & Co., Ltd., 54, St. James St., Piccadilly, London, S.W "Sociable, St. James, London." Regent 912.
Mann, Egerton & Co., Ltd, Norwich. "Motors, Norwich." Norwich 482 (4 lines).
Martinsyde Ltd, Brooklands, Byfleet, "Martinsyde, Weybridge." Woking 331; Byfleet 171
National Aircraft Manufacturing Co., Ltd., 15, Drummond Crescent, Seymour Street, Euston. Museum 3373
"Nieuport" & General Aircraft Co., Cricklewood, London, N.W.2 "Nieuscout, Crickle, London." Willesden 2455.
The Regent Carriage Co., Ltd., 126/132, New King's Road, Fulham, S.W.6 "Carbodis, London." Putney 2210-2241.
Roe, A. V., & Co., Ltd., Manchester. "Triplane, Manchester" City 8510-8531, Manchester.
Saunders, S. E., Ltd., East Cowes, I.O.W. "Consuta, East Cowes" Cowes 193
Short Bros., Rochester, Eastchurch and Whitehall House, S.W. "Tested, Phone, London." Regent 378
Sopwith Aviation Co., Ltd., Kingston-on-Thames. "Sopwith, Kingston" Kingston 1988 (8 lines).
Standard Aircraft Manufacturing Co., 28, Bow Common Lane, E. East 2821.
Tarrant, W. G., Byfleet, Surrey "Tarrant, Byfleet." Byfleet 2, 2 & 3.
Thames Aviation Works, 141, Curtain Rd., E.C 2. London Wall 9766.
Vickers, Ltd., Imperial Court, Basil Street, Knightsbridge S.W.3 "Vickerfyta, Knights, London" Kensington 6810.
Waring & Gillow, Ltd., Hammersmith. "Warisen, Ox, London." Museum 6000.
Westland Aircraft, Yeovil. "Aircraft, Yeovil." Yeovil 129
White, J. Samuel, & Co., Ltd, East Cowes. "White, East Cowes" Cowes 3.
Whitehead Aircraft (1917), Ltd., Richmond, Surrey "Whitecraft, Richmond, Surrey" Richmond 1780-1.
Wycombe Aircraft Constructors, Ltd., High Wycombe, Bucks. "Aircraft, High Wycombe." High Wycombe 84

Airships—
Airships, Ltd., High Street, Merton. Wimbledon 1318
Short Bros., Rochester, Eastchurch, and Whitehall House, S.W "Tested, 'Phone, London" Regent 378

Aluminium Castings (Sand and Die)
Coon, R. W., 210, Goswell Road, London, E.C.1. "Krankases, Isling, London" City 3846.

Bent Timber Parts—
Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London" Museum 496.
Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.

Bearings (Etonia Cast Phosphor Bronze)
Yorkshire Engineering Supplies, Ltd., Wordley, Leeds. "Yes, Leeds." Central 3927.

Blowpipes (Oxy-Acetylene)—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic. 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Vic. 3540 (3 lines).

Brass Sheets for Tipping Propellers—
Pritt & Co., 46, Fenchurch Street, London, E.C.3. "Poetry, Fen, London." Avenue 995, 996, and 7996.

Buildings—
Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.
The Camden Construction Co., Ltd 289, High Street, Camden Town, N.W.1.
Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey. Wimbledon 1313
Rubery, Owen, & Co., Darlaston, South Staffs
The Wilfley Co., Ltd., Salisbury House, London Wall, E.C.2. "Wrathless, 'Phone, London." City 2681-2.

Cable Coverings and Cable Controls—
The Bowden Brake Co., Ltd., Tyseley, Birmingham. "Bowden, Acock's Green." Acock's Green 103 & 104.
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Carburettors—
Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2 Victoria 4670.

Casein—
Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C. 3. "Suricodon, Fen, London" Avenue 34 and 35

Celluloid (Non-Flam.)—
Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London." Central 1306-7.

Clothing—
Burberry's, Ltd., Haymarket, S.W.1. Regent 2165.
Dunhill's, Ltd., Euston Road, N.W.1. "Dunsend, London." North 3405-6.

Coloured Rags—
Joseph, A., Earl Street, London Road Southwark, S.E.1. "New Mongo Sedist, London" Hop 83, 367, 4272.

Component Parts—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (4 lines)
Central Aircraft Co., High Road, Kilburn, N.W.6 "Aviduction, Phone, London" Hampstead 4403 & 4404
P.D.V. Aircraft Co., Ltd., Princes Street, Richmond. "Aeros, Richmond" Richmond 1681
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros., Bilston." Bilston 10.

Cords, Tapes, and Threads—
MacLennan, J., & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Dopes—
British Aeroplane Varnish Co., Ltd., 166, Piccadilly, W.1. "Tetrafrec, Piccy, London." Gerrard 2312.
British Cellulose Co., 8, Waterloo Place, S.W.1 "Celletate, London." Regent 4046
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London" Gerrard 280.
Cellon, Ltd., 22, Cork Street, London, W.1. "Ajaxb, Reg, London." Gerrard 440
Clark Ingham, Robt., and Co., Ltd., Walter House, Bedford Street, Strand, W.C.2. "Pearline, Westrand, London" Regent 3925.

Engines and Parts—
Allen, W. H., & Co., Ltd., Bedford. "Pump, Bedford" Bedford No. 1.
Arrol-Johnston, Ltd., Dumfries "Mocar, Dumfries" Dumfries 281-282
The Beatty School of Flying, Ltd., The Broadway, Cricklewood, N.W.2 Hampstead 3000.

Engines and Parts—
Beardmore Aero Eng., Ltd., 112, Great Portland Street, W.1. "Beardmore, London." Gerrard 248.
Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W.1 "Aeroflight, Vic, London." Vic. 7026.
Gordon Watney & Co., Ltd., Weybridge. "Mercedès, Weybridge" Weybridge 550 (7 lines).
Green Engine Co., Ltd., Twickenham. Richmond 1203.
Gwynnes, Ltd., Hammersmith, W. "Gwynne, Hammersmith" Hammersmith 1910.
Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London" Gerrard 6926.
Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1654-6.
Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton" Wolverhampton 985.
The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1 "Elevenfold, London" Walthamstow 408 (2 lines).

Electrical Accessories—
Belling & Co., Montagu Road, Upper Edmonton, N.18 "Belling, Edmonton" Tottenham 1084.
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Eusroad, London." Museum 70
Premier Electric Heaters, Ltd., 258, 259, and 360, Bradford Street, Birmingham "Fahrenheit, Birmingham." Midland 981.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Electric Cables—
E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 242.
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2207; London Wall 1564.

Electric Lighting and Power—
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W. "Installing, Eusroad." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—
W. Canning & Co., 135-137, Great Hampton Street, Birmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines).

Enamel—
Silica Enamel Co., New Cross, London, S.E.

Flare Lights—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flexible Shafts—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Fluxes—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools—
Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton." Bournemouth 1160.
Cambridge School of Flying and Aerodrome Co., 308, St. Andrews Street, Cambridge. "Carbon, Cambridge" Cambridge 5 and 1086.

Furniture (Office)—
Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C. London Wall 573 and 6179.

Galvanising—
Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

Gauges—
J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17

Gears—
Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham. "Mosgear, Birmingham" East 407.



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Glue—
Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Bececolin, Cannon, London." City 1206.
Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Wapp, London." Avenue 3178.
Meudiue Co., 8, Arthur Street, E.C. Bank 5873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3.

Goggles—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Hack Saw Blades and Machines—
Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880.

Heating and Ventilating—
Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 372 (2 lines).
Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).

Hollow Spars—
McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718.

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1108.

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17. "Aneroid, Phone, London." Walthamstow 180.

Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London. "Pegamoid, Cent, London" City 9703 (2 lines).

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1. "Vicksmag, Phone, London" Museum 430.
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry" Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry." Coventry 1008-1009.

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham. "Clifford, Birmingham." Central 42-43. Avenue 1432.

Metals in General—
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.
Pritt & Co., 46, Fenchurch Street, London, E.C.3 "Poetry, Fen, London." Avenue 995, 996, and 7996
Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London." City 6342.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4059.
Aircraft Supplies Co., Ltd., Ascot House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton (Bolts and Nuts.) "Bayliss, Wolverhampton" Wolverhampton 1061.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3 Avenue 1342
Lombard Rim and Tube Co., Lombard Street, Birmingham "Lombardic, Birmingham." Midland 211 (2 lines).

Metal Parts and Fittings—
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing. Eusroad, London." Museum 70.
Mountford, Fredk., Lt., Lifford, Birmingham "Fremo, Birmingham." King's Norton 261
Rubery Owen & Co., Darlaston, South Staffs
Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston." Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Salford." Keynsham 21.

Metal Spinnings—
Arnold & Sons, Lawrence Road, Tottenham, N.15.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast" Belfast 4033-4034-4035.
Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith "Frodobrake, Birmingham." Central 793
MacLennan, J., & Co., 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 37 & 381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines)

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames.
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2 "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London" London Wall 3266-3267.

Pattern Making—
Fredk. Ward, 6, 7 and 8, Allsop Street, Upper Baker Street, W Padd. 4743.

Piston Rings—
British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.

Plating, Nickel Silver and Electro Tinning—
Arnold & Sons, Lawrence Road, Tottenham, N.15.

Power Presses and Dies—
Bliss, E. W., & Co., 32a, Pocock Street, Blackfriars Road, London, S.E.1. "Blissden, London." Hop. 4340.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Perry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch" Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich" Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston" Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9 Kingsbury 104
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge" Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich "Motors, Norwich" Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." 24214 Leeds.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil Yeovil 129.

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England "Cradock, Wakefield." Wakefield 466

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Invertors, Redditch." Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds" Roundhay, 345 (3 lines)
Gosport Aircraft Co., Gosport "Flight, Gosport" Telephone No. 217.
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester" Chatham 627.
Supermarine Aviation Co., Ltd., Southampton "Supermarine, Southampton." Southampton 3537.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds Leeds 21953.

Searchlights & Landing Lights—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex "Golshel, Hounslow" Hounslow 254

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Arnold & Sons, Lawrence Road, Tottenham, N.15.
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds" Roundhay 345.
W. H. Briscoe & Co., Ltd., 41 and 42, Park Street, Birmingham. "Brisk, Bham." Central 660.
British Metal (Kingston), Ltd., Kingston-on-Thames
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London" Vic 4830.
Arnold & Sons, Lawrence Road, Tottenham, N.15.
British Metal (Kingston), Ltd., Kingston-on-Thames [Staffs
Rubery Owen & Co., Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London" Regent 1181.
Arthur Hill & Co., Silchester Road, North Kensington, W. Park 1243.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London" Victoria 3540 (3 lines).

BUYERS' GUIDE cont. on next page.

"The Aeroplane" Buyers' Guide.—*continued*.

Small Tools—
The Small Tool Supply Co., Ltd., Avenue Chambers, Southampton Row, W.C. "Prosait, West-Cent., London." Museum 2655.

Sparking Plugs—
Lodge Sparking Plug Co, Ltd., Rugby. "Igniter, Rugby." Rugby 235.
Ripault, Leo. & Co., Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

Springs—
Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 222.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Stampings—
Arnold & Sons, Lawrence Road, Tottenham, N.15.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3. Avenue 1432.

Steel—
Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 to 3237.
Guthrie, J. B., & Son, 30, St Mary Axe, E.C.3. Avenue 1432.
Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Steel Stamps and Markings—
John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).

Tanks & Cowls for Aeroplanes
Zephyr Ventilating Co., Ltd., Tyopiatt Road, Bristol. Telegrams — Zephyr, Bristol

Taper Pins—
Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—
MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Timber—
Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526.
Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.
J. Owen & Sons, Ltd., 109a, Borough High Street, S.E.1. "Bucheron, London." Hop 3811 (2 lines).

Time Recorders—
Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles— Staffs.
Rubery Owen & Co., Darlaston, South Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Eusroad." Museum 70 (4 lines).

Tyres and Wheels—
The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent." Gerrard 1214 (5 lines).

Undercarriages—
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.
Clark Ingham, Robt., & Co., Ltd., Walter House, Bedford Street, Strand, W.C.2. "Pearline, Westrand, London." Regent 3923.
Harland, W., & Son, Merton, London, S.W.19. "Harland, Wimbledon 45." Wimbledon 45 and 1395
Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—
Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95.

Washers— Avenue. 1432.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Watchmakers and Jewellers—
(Silver Models)—
Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines).

Welding and Cutting Plant—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma Vic, London." Vic 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Welding Repairs—
Arnold & Sons, Lawrence Road, Tottenham.
Barimar, Ltd., 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.
The New Welding Co., 26, Rosebery Avenue, London, E.C.1. "Windoneeda, Holb, London." Holborn 5252.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Wind Shields—
Auster, Ltd., 133, Long Acre, W.C. "Winflector, London." Regent 5910
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesdon Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Wire Gauze—
Greening, N., & Sons, Ltd., 16, Finsbury Street, London, E.C.2. "Setscrew, Finsquare, London." London Wall 1082
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3. Avenue 1432.

Wires and Cables—
Brunfons, Musselburgh, Scotland. "Wiremill, Musselburgh." Musselburgh 28.
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466 (3 lines).

Wirework—
Terry, Herbert, & Sons Ltd., Redditch. "Springs, Redditch." Redditch 61.

Woodworking Machinery—
Robinson, Thomas, & Son, Ltd., Rochdale. "Robinson, Rochdale." Rochdale 467.
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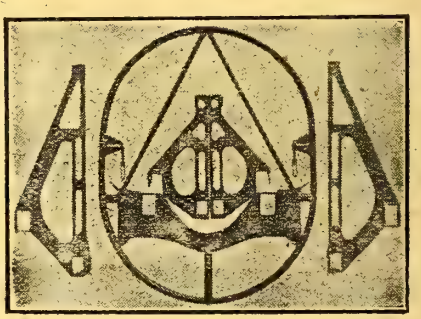
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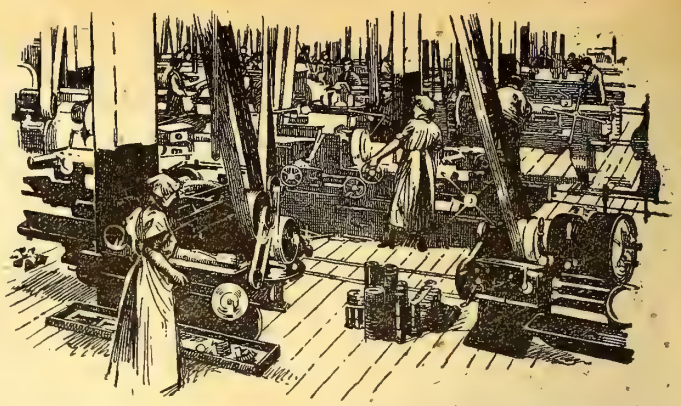


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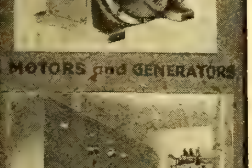
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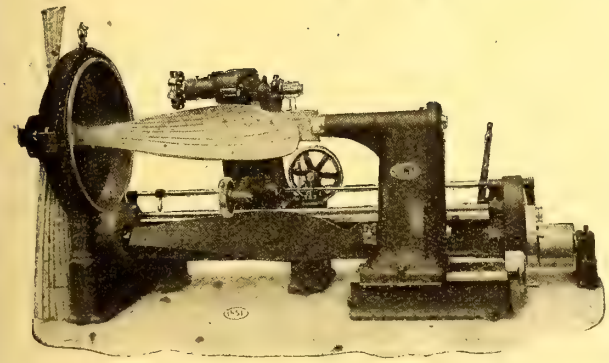
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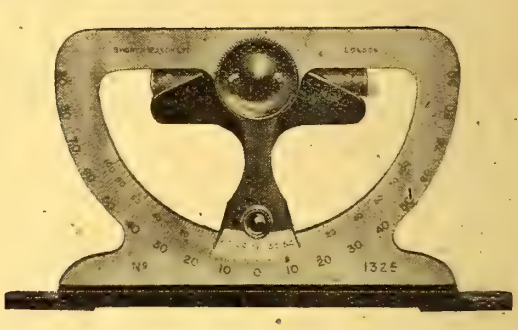
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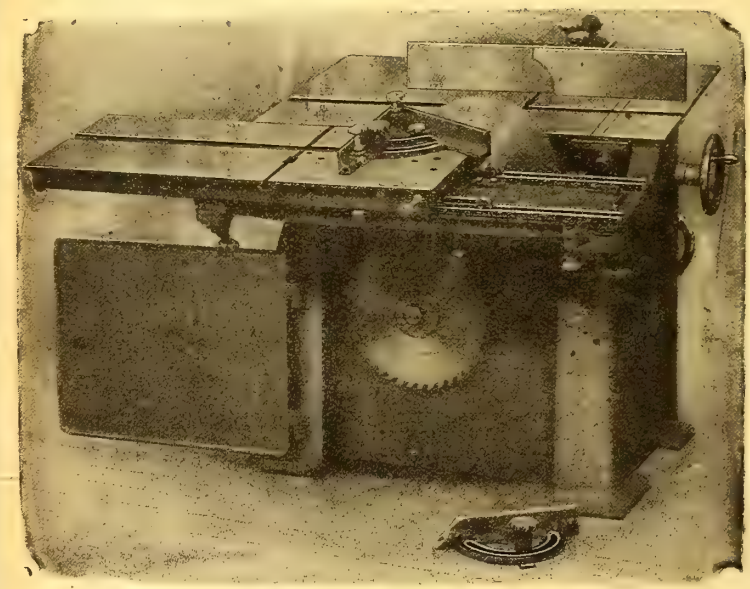
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With a surface area of 20.14 square metres the load is thus 34.4 kg. per sq. m.

The performance load amounts to

$$\frac{964}{130} = 5.33 \text{ kg h.p.}$$

Owing to the staggered position of the planes and the moving of the tanks behind the pilot, his seat has advanced much forward, there being thus a good sight forwards and upwards.

From this arrangement there arise aerodynamically no drawbacks for the longitudinal stability. Yet the enlargement of the angle of incidence of the upper planes towards the ends should have a bad influence on the lateral stability.

A MATTER OF FUTURE POLICY.

One ventures to suggest to the High Authorities that in the interests of the Aircraft Industry after the war, and in the interests of the Treasury which will doubtless hope to draw considerable revenue from that industry, it might be wise to be a little more generous to British aircraft when circulating information or photographs from the Press Bureau, or the Ministry of Information, or whatever the department may be which provides the diluted mental pabulum provided officially for the British public. Possibly the feeble intellect of the public cannot well stand anything stronger than the mental equivalent of skilly, but even so much skilly as is served out might at least be good of its kind.

Probably if one asked the average British-speaking individual in any part of the world what was the best twin-engine aeroplane to-day, he would say a Gotha, simply because he has always heard the Gotha boomed as the great twin-engine bombing machine. How much more, therefore, must the idea prevail in neutral countries where not only the British Press but the German press also is continually booming German products?

Surely it should not be above the capabilities of our Press Bureau or our Ministry of Information so to arrange things that the names of German aeroplanes shall not be given this constant international free advertisement, and that British aeroplanes shall be advertised in their stead. Such machines, for example, as the Handley Page, Bristol Fighter, de Havilland, Sopwith of various sorts, and so forth, have fallen into the hands of the enemy during the past twelve months, so that no harm can be done by disclosing the names of these machines to the public. Yet when official photographs are sent out for the enlightenment of the readers of the British Press, one finds, for example, obvious Handley Pages labelled "R.A.F. bombing machines," or a number of de Havillands somewhat similarly labelled "A patrol of R.A.F. machines," or perhaps a portrait of a distinguished visitor inspecting a Bristol labelled—"So-and-So of So-and-So is interested in a British battleplane," or possibly a flight of Sopwith "Camels" labelled, "A squadron of R.A.F. fighters."

If one did not know that it was merely ignorance on the part of our officials, one would be inclined to put it down to a regular policy of preventing British aircraft from becoming known abroad, so that German machines may have all the benefit of advertisement in the British Press with a view to after-the-war trade.

This is really a matter which the Society of British Aircraft Constructors might reasonably take up with the Ministry of Information rather than with the Air Ministry. The Air Ministry itself is perfectly logical and reasonable in permitting the publication of the names of British machines whenever it is known perfectly well that such machines are already known to the enemy, but it is not the Air Ministry's business to circulate information to the non-technical Press, and apparently the Ministry of Information is incapable of doing it in such way as to be advantageous to British industry.

One suggests that the S.B.A.C. should press the Ministry of Information to put on its staff some incapacitated aviator with a little journalistic experience, whose job it should be to check and render informative all photographs and paragraphs sent out concerning aviation by that Department.

It is about time that the Ministry of Information awoke to the fact that the manufacturing resources of this country are the only channels through which the country can after the war regain its lost capital, and that to enable these resources to be used to the full they should be boomed during the war in every possible way to all the ends of the earth.

AERONAUTICAL FALLACIES.

Sir,—As a yachtsman of some slight experience of rudders and their uses, may I venture to call the attention of the author of "Fallacy No. 1" to the fact that the rudder of a boat is actually used to a great extent as a speed controller, especially when sailing on a wind, and "Bolo Bertie's" simile between the action of the elevator on an aeroplane and a rudder on a boat is quite justifiable.

The function in each case is to alter the direction of movement, and neither the rudder nor the elevator is supposed to know why, or what the consequences will be.

A sailing boat loses way when luffed just as an aeroplane does when the elevator is raised suddenly. No doubt a yachtsman would be quite entitled to say that he was engaged in "exchanging kinetic energy for potential energy" when he gave his craft a "savage luff," but the latter is more snappy and sailorlike.

The term "Zooming" to my ear sounds very "unairmanlike" and is not in the same street with "Cross-waffle," and other expressions used by flying men. Perhaps I am unduly biased, as it recalls the case of a novice I once sailed with who called "going about" "swooping." I have not seen the term "flaw" used in connection with flying; it seems better than "air-pockets" and French words.

(Signed) "Mersey Yachtsman."



The de Havilland Single Seater fighter.

THE PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by The Aeroplane from the current Official Patents Records :—

Patents Applications.

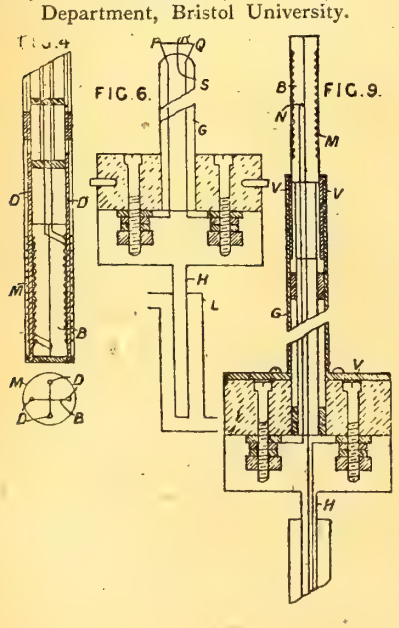
Brackensey, A. H. Spars for aircraft. No. 11943. July 22nd.
Brettell, W. J. Additional means of defence for aeroplanes engaging hostile aircraft. No. 12123. July 25th.
Calthrop, E. R. Parachutes. No. 12082. July 24th.
Chanard, A. Incendiary bombs. No. 12059. July 24th.
Egginton, W. H. Means for indicating height of aircraft above ground when landing at night time. No. 12253. July 27th.
Gosling and Moore. Aeroplane shock-absorber connections. No. 12115. July 25th.
Hamblet, J. Means for silencing noise of aeroplane blades and exposed wires when in motion. No. 12237. July 27th.
Hann, A. P. Incendiary, etc., bombs. No. 12129. July 25th.
Hann, A. P. Bomb, etc., carrying and releasing devices. No. 12130. July 25th.
Hirst, G. A. Aircraft, and position-indicating means for same. No. 12028. July 23rd.
Holliday, P. A. Internal-combustion engines for aircraft. No. 12177. July 26th.
King, E. P. Aircraft propellers. No. 12279. July 27th.
Koolhoven, F. Aeroplanes. No. 11993. July 23rd.
Koolhoven, F. Leading aircraft with ammunition for quick-firing guns. No. 11995. July 23rd.
May, W. J. Bomb-sighting and speed-indicating apparatus for aeroplanes, etc. No. 11933. July 22nd.
Moss, A. E. Parachutes for aviators. No. 12273. July 27th.
Oakes, P. Aeroplanes. No. 11981. July 23rd.
Pilchowski, L. Aeroplanes. No. 12064. July 24th.
Reid, W. T. Controls for aeroplanes, etc. No. 12017. July 23rd.
Reid, W. T. Controls for aeroplanes, etc. No. 12018. July 23rd.
Roe and Co., A. V. Hinged aerofoils for aircraft. No. 11979. July 23rd.
Soc. L. Breguet. Aeroplanes. No. 12005. July 23rd.
Spurr, A. H. Apparatus for raising, supporting, and/or propelling aircraft, etc. No. 12136. July 25th.
Steel, A. I. Airships. No. 12106. July 25th.
Walsh, F. F. P. Aircraft controls. No. 12197. July 26th.
Webb, J. F. Aeroplane without wings. No. 12128. July 25th.
Westaway, J. Means of enabling flights in aeroplanes, etc., to be commenced and terminated over marine, etc., surfaces, and for transport of such machines. No. 12075. July 24th.
Yates, J. W. Aerial bombs for distributing poisonous gases. No. 12257. July 27th.

Complete Specifications Accepted, Prints of which can be Obtained on and after August 15th, 1918.

117,501. July 23rd, 1917. Welsh, J. Bomb-dropping apparatus for use in aircraft.
117,570. Jan. 3rd, 1918. Apparatus for detecting side-slip in aeroplanes.

Abridgments of recently published Specifications.

115,729. Anemometers, etc.; logs, etc. Williams, I., Physics Department, Bristol University.

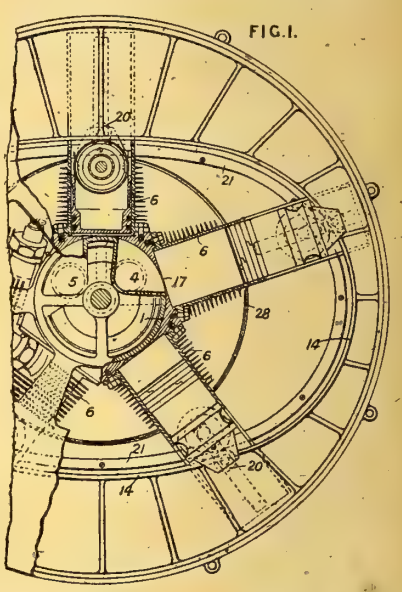


In order to measure the velocity of a fluid, or the velocity of a body such as an airship, aeroplane, or ship through a fluid, a wire P Q, Fig. 6, heated by an electric current is exposed to the fluid, and an electric resistance thermometer or a thermo-couple is acted on by the heated wire. The heating-circuit may be kept constant and the fluid velocity measured by measurement of the effects on the thermometer or thermo-couple, or the temperature may be kept constant by variations in the heating-circuit, in which case these variations are used to measure the velocity. The heated wire P Q may be disposed outside a glass tube G, and one junction of a thermo-couple connected to it by a wire S R, the other junction being packed in insulating-cloth and disposed in a tube H surrounded by a jacket L, through which the fluid flows. In a modification, the heated wire is coiled on a mica cross B, Fig. 9, inside a metal casing M secured to the tube G, and a number of thermo-couples in series are used, each with one junction at N and with the other in the tube H. A metal protecting-tube V may be provided. In the modification employing an electric resistance thermometer, the heated wire disposed inside a metal casing M is coiled round supporting-rods D, Fig. 4, placed outside the thermometer coil on a mica cross B.

115,873. Internal-combustion engines. Egerton, Sir W., Renby Grange, Boarshead, near Tunbridge Wells.

Four-stroke-cycle Engines; driving-gear; cylinders, cooling.—Cylinders 6, containing pistons which engage a stationary cam-track 14, rotate on a cylindrical drum containing inlet and exhaust ports 4, 5, respectively, which register with ports 17 in the closed ends of the cylinders. The cam is flattened at its upper portion to reduce the cylinder clearance at the end of the exhaust stroke. Supplementary cams 21 are engaged by rollers 20 carried by the pistons. For cooling the closed ends of the cylinders, air is forced by a fan (not shown) into the interior of the distributing-drum 1. A band 28 on each side of the cylinders prevents the admission of dust and foreign matter to the driving-mechanism.

FIG.1.



According to the Provisional Specification, each piston may be connected to a separate crankshaft, the shafts being geared to a common wheel on a main driving-shaft.

115,466. Girders, etc.; aircraft. Ford, L. C., 12, Ordnance Road, St. John's Wood, London.

Girders, beams, spars, ribs, and other rigid structural members are formed from tubes or other hollow bodies by cutting and bending certain portions so that box girders with cross-braces or ties are produced. Such girders are applicable for the frames of the wings of aircraft. The girder shown in Fig. 3 is formed by cutting the tube shown in Fig. 1 along the full lines, and bending the cut portions along the dotted lines. The cuts 1 for the diagonals 7 on opposite sides are inclined in opposite directions. The flanges 4 of opposite vertical members 5 may abut or be overlapped and secured together. Bent portions 8 constitute flanges for the booms, and may be beaded, flanged, or fluted, or be folded to form tubular booms. Diagonal ties 11, 12 are bent from the top and bottom falls of the tube. In the modification shown in Fig. 5, the flanges to the parts 5, 7 are omitted, and the tube is strengthened transversely by strips 14, 14*a* bent from the diagonals 7 and secured to the opposite diagonals 7 and cross-braces 11. Two or more tubes may be connected, as shown for example in Fig. 6, by means of the bent portions 5, 7, which may be flat or convex in cross-section, and the remaining walls of the tubes may be bent to form a triangular section. In another modification, one tube A^4, Fig. 9, is secured inside the other tube A^3 by means of the bent portions a^3, a^4, and the top and bottom walls may be similarly connected. The tubular blanks may be rectangular as shown, or circular, triangular, or stream-line in section; the shape of the cross-section may vary along the length, and the tubes may be twisted or bent longitudinally, and be closed at one or both ends. Sheet-metal blanks may be cut, stamped, and fluted, and then be formed into tubes or other hollow bodies having the cross-braces described above.

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THE SOCIETY OF BRITISH AIRCRAFT CONSTRUCTORS S.B.A.C.

COMMERCIAL AERONAUTICS

AIRCRAFT AND WATER TRANSPORT.

This particular comparison can hardly be based on quite the same considerations as those which have gone before it, particularly because water transport may be represented by anything from the ocean liner down to the canal barge, and, therefore, the unit is a very variable one.

Cost of Operation.

The outstanding merit of practically every organised system of water transport is, however, its extremely low cost of operation. In the case of ocean transport the low cost is achieved mainly by the carriage of large weights. To a lesser extent, this applies also to river and canal traffic. Another point is, of course, that it is possible to propel a vessel without any direct expenditure upon power, but merely by utilising winds, tides and streams. Wherever direct communication by water exists, and the bulk of the traffic is at all considerable, water transport is the most economical of all methods. Certainly, aircraft cannot possibly expect to compete with it as regards costs of operation per ton handled.

Standing Charges.

In the matter of standing charges also, water transport is very favourably circumstanced. The cost of the carrying vessel is small in relation to the load that it can carry. Under most circumstances, depreciation of the vessels used is not rapid, and, under most circumstances, again, no special route has to be provided. The only exception is in the case of canals or canalised rivers. In other instances, admittedly, the route has to be improved by the deepening of rivers, or the dredging of harbours and roadsteads. On the whole, however, in this matter of the cost of providing the route upon which to travel, water transport is comparable with aerial transport, the main cost being the provision that has to be made at the terminal points of the journey.

Combined Standing and Running Costs.

From what has already been said, it will be clear that water transport almost always has the advantage as regards total costs. It would only be where water transport was conducted with extreme difficulty and danger between very distant points that the aeroplane service could have the advantage from this point of view.

Mobility.

Here the aerial service has very material advantage since it can start approximately from any desired point and terminate also very close to the actual destination of its goods or passengers. Water transport is seriously lacking in this form of mobility. It can only ply direct to or from an inland point provided that an expensive waterway is cut from the coast to that point, unless the point in question happens to be served by a navigable river. Water transport is admirably mobile so far as concerns all points situated upon the seaboard. The great majority of transport does not, however, begin and end upon the coast, and this means the use of various forms of conveyance for various portions of the journey and the delays inseparable from effecting changes from one to the other.

Speed.

As regards speed, the aeroplane has a considerable advantage over the fastest forms of water transport, and an immense advantage over the slower forms. It is only in its slower forms that water transport is inherently a highly economical method and, where waterways are narrow, only moderate speeds are possible on account of the erosion of banks following upon the wash set up by high speed vessels. Thus, if any really high speed inland traffic is essential, no system of waterways can compete with the provision of aerial services. In fact, the lack of speed is so inherent to inland water transport that the system would hardly ever be adopted as a sole means of developing a young country. In conjunction with aeroplane services, it might, however, be very effective. The two together would represent the extremes of transport, the one specially suited for fast, light work and the other for slow, heavy work.

Punctuality and Regularity.

In the matter of regularity, almost all water transport services leave something to be desired. Even the finest liner cannot always arrive exactly to time. Coastal services conducted by sailing vessels are notoriously unpunctual and even canal services are liable to variations in the time occupied, dependent upon delays at locks. Transport across exposed water is, of course, affected as regards punctuality by storms and fogs, and there are some conditions under which such services have to be suspended for indefinite periods. In fact, water transport generally shares with aerial transport the disadvantage of any system which has no fixed and prepared route, and also the advantages of such a system. Altogether, there is no reason to suppose that the aerial services of the future will be at any considerable disadvantage as regards regularity and punctuality when compared with water transport.

Provisional Conclusions.

While aerial services are undoubtedly possible across very wide stretches of water developments in this direction are likely to be slow on account of the serious results that might follow upon sudden storms or upon any derangement of the propelling machinery. On the other hand, any stretch of calm water affords a place of landing for a suitably equipped aeroplane. In a country which is only worth developing in the neighbourhood of its main rivers, a combination of water and aerial transport should prove very effective. The aerial services would follow the line of the river and would do all the express work, whereas the slow work would be done by vessels upon the river itself. The aerial services would be particularly safe because landing would be possible anywhere along the route. There would be no difficulty about picking up and setting down passengers at intermediate points. The whole business of such a country would be immensely smartened up if the river services already in existence were supplemented by aerial mail and passenger services. Men whose time is valuable would no longer hesitate to visit such regions with a view to assisting possible developments and investments. Less important districts not immediately adjacent to the rivers would be provided with communications for passengers and light goods and their initial development thus encouraged. Throughout the whole scheme, in the opinion of the writer, it would be a great mistake to lay too much stress on the importance of high flying speeds. The competing form of traffic is so particularly slow that any practical flying speed would be extremely high in comparison. A man who is accustomed to wait about ten days or more for the delivery of his letters after their arrival at the port would not care much whether the aerial services brought them to him in three hours or in five. When it is a question of readily effecting a saving of days or weeks we need not trouble about saving minutes, and incurring considerable costs in so doing.

RUSSIAN AERIAL WORK IN TIMES OF "PEACE."

(Translated from an article which appeared in the "Nashe Vremia" of April 8th, 1918. O. Poutiatine, Moscow.)

In the outskirts of Moscow, at the fashionable restaurant, "The Yarr," the Administration of the Russian Aerial Fleet has taken up its abode. In the brightly lit halls and small private rooms one catches glimpses of the blue uniform and the weather-beaten and characteristically calm faces of the aviators. Here, all unnoticed by poor narassed Moscow, is being worked out and is nearing completion a great achievement—the transition of aviation from its warlike activities to its work in time of peace.

A special department of the Air Fleet has been created for adapting aviation to the needs of peace time. The department is under the direction of the well-known military aviator, Jatzuk and his assistant Potryshkin.

The heads of this department told the correspondent of "Nashe Vremia" the following facts about its work:—

After the cessation of military activities there remained a vast and exceptionally rich store of aeronautical plant and a whole army of experienced aviators.

[This is the first one has heard of them. They do not seem to have been much in evidence while there was any fighting to be done.—Ed.]

It was decided to make use of these riches for work in times of peace. To this end the department for adapting aviation mapped out for itself three chief objectives—the development of aerial communications, the utilisation of aerial photography for practical needs, and the development of aviation as a private enterprise.

Communication by Air.

The first impulse towards the development of communication by air was given by small aerial units, who, having been cut off from headquarters, in small southern towns, and being thrown on their own resources, took upon themselves the transmission of valuable packages and correspondence, for a definite charge.

[Charges, definite or indefinite, for everything seem to be a necessary lubricant to progress in Russia.—Ed.]

Two very successful experiments of this kind were carried out in Kharkov and in the Caucasus. A department for Aerial Communications was founded in Moscow, which worked out in detail the plans of the projected lines of aerial post—Moscow—Bologoe—Petrograd, and Moscow—Orel—Kursk—Kharkov. Both lines are divided into distances of 300 versts, each section being served by eight aeroplanes. The advantage of aeroplanes in postal work is their pace and their independence of local conditions.

[*Id est*, presumably, if local conditions are Bolshevik the post goes on to the nearest Czecho-Slovak centre.—Ed.]

The minimum speed of an aeroplane is 110 versts and the maximum speed 200 versts an hour. With such a speed the time taken from Moscow to Petrograd (including stoppages) would be not more than seven hours, and from Moscow to Kharkov eight to nine hours. But particularly valuable at the present time would be the fact that the aeroplane would be beyond the influence of delays on the railway by destroyed lines and civil war.

[Anyhow it is a fine means of escape.—Ed.]

The weight an aeroplane can lift varies from 10 to 60 pouds (poud=36 lbs.), in other words, each machine could carry about four thousand letters, which, at the present day postal rates, would give a considerable return, sufficient not only to defray the expenses of flight and the aviator's salaries, but bringing in a good profit to the State.

Aerial Observation.

The Adaptation Department has chosen as its field of experiment the Government of Moscow. In time it is suggested that in every district town two or three aeroplanes shall be maintained, to make daily flights round their district, such a flight taking about one and a half to two hours. Flying round his district the aviator would watch for forest or bog fires.

[If they were only the blazing houses of the aristocracy presumably he would come down and help in the looting.—Ed.]

It would be suggested to all village Co-operative Stores that they should have very large placards with the words "Doctor" or "Veterinary," etc., on them, which could be displayed in case of need. Having made his round, the aviator would descend in the town and make his report on all he had seen. Aeroplanes, made use of in this way, would make it possible to organise prompt assistance in the country districts, to send doctors, to take steps against fire and flood, etc.

Besides this, in places where the crops suffer from pests, where cattle are dying, or some infectious disease is spreading, even before the arrival of help from the district town the aviator would be commandeered to the spot armed with booklets describing the first steps to be taken to fight the oncoming disaster. The aviator flying over the distressed village would scatter these tracts broadcast.

[Presumably the books would contain instructions as to how the illiterate Russian was to learn to read them.—Ed.]

Besides this, it has been suggested that special scouting machines be made use of to help the fishing industry. In the large fishing centres, such as Mourman, the Caspian and the Sea of Azov, aeroplanes flying over the sea will notice the direction taken by shoals of fish. It will be easy to see the "Fish Banks" from a great height, as the greater the height the easier it is to see what is under the surface of the sea. Having noticed the direction taken by the fish, the aviator would let the fishing fleets know where to put out their nets.

[And would probably demand "baksheesh" before he told them where the fish were feeding.—Ed.]

Aeroplanes and the Surveying of Land.

The Adaptation Department decided in the first place to make use of the freed machines for surveying and fixing of the boundaries of land In this direction the department will work in close contact with the Commissariat for Agriculture. For a more or less correct and complete realisation of the land reform, and especially for the fixing of the new boundaries, it is indispensable in the first place to have correct maps of all holdings, districts and governments. Contemporary maps, even those edited by the General Staff, are incomplete, far from correct in detail, and, in many ways, not up to date.

[One was under the impression that the Bolsheviks fixed all boundaries by the simple process of stealing all they could acquire and then fighting their friends the Germans for it.—Ed.]

By means of photography from aeroplanes, exceptionally correct plans can be made, and our Air Service has every requisite for carrying this out.

[Except possibly plates, chemicals and aeroplanes.—Ed.]

From a height of two versts on a plate 13 by 18 centimetres it is possible to photograph an area of two square versts, i.e., 200 dessitins, and the time required is not more than one minute.

[An exposure of a minute from an aeroplane would give a result about as clear as a Russian conscience.—Ed.]

The photographic apparatus used in the Russian Air Service, "Fotte's," takes 50 consecutive photographs, that is in 30 mins. it will take an area of 10,000 dessitins. Having armed himself with three boxes of plates, which is quite possible—[If he can steal them.—Ed.]—the aviator can, during one flight, photograph 30,000 dessitins. The photographs are not only useful for making plans for the fixing of boundaries, but also as showing the forest areas and the size of clearings, etc. Furthermore, with the development of coloured photography it will be possible even to determine with accuracy the variety of trees.

Having been exposed, the plate is subjected to what is called photographic finish, during which time the photographed plan is corrected by angle and elevation, with the result that a precise map of the area is made with heights, etc., marked. The accuracy of the photograph is such that at the front it was easy to decide by the aerial photographs such small measurements as the depth of a breast-work, the height of a tree, and the concealments of machine guns, which to the naked eye were impossible to detect.

[The only things forgotten at the front was how to fight, how to win battles, and how to be loyal to the Czar.—Ed.]

Aeroplanes and Unsown Fields.

By means of aerial photography an accurate account will be made this spring of all unsown fields. In connection with the famine and with the disorders of rural life such an estimate is of the greatest importance. Altogether, aeroplanes will be made use of as a means of making estimates, statistics, and even as a means of control. Thus, up to the present, it has been absolutely impossible to compute the number of heads of cattle belonging to a village, as, during the taking of the census, the peasants habitually conceal large numbers of cattle, being afraid of requisitions. The aviator flying over a marked area at a time when the cattle are at pasture, photographs the herd, and thus a sufficiently correct estimate of the number belonging to a certain village could be formed.

[After which presumably he descends and demands a certain number for himself as a reward for not reporting the true number to the authorities.—Ed.]

In the Service of Science.

Aeroplanes will also be used for hydrographical research (for determining the navigable water courses of rivers, their shallows and rapids) and for meteorology. The meteorological appliances of our aeroplanes are on a very high level; in this respect our instruments equal those of the first class meteorological stations. In the domain of meteorology our aeroplanes will be used, as our aviators say, "in the service of the weather." Besides this aeroplanes will be found invaluable for the carrying out of geographical research work or exploration in places difficult of access. It is necessary to notice that the carrying out of aerial work will be three times as cheap as the same work done on the ground, even reckoning the latter at pre-war estimates.

[Cheaper because there are fewer people in the air to be bribed.—Ed.]

What has Already been Accomplished.

The Administration of the Air Fleet has come into contact with the Commissariat of Agriculture and with the local institutions of districts and governments, and has received from them, for this spring, definite orders for taking of plans of agricultural and forest areas. Representatives of the Adaptation Department give detailed accounts to all interested organisations and scientific institutions, and general interest in the new domains of aviation is fast spreading.

The Administration of the Aerial Fleet has a large number of machines ready for work, and a large staff of experienced aviators, and thanks to this can, this spring, start work at high pressure.

[Pressure being exerted, presumably, by the invading Germans, to make the Aerial Fleet escape to the East.—Ed.]

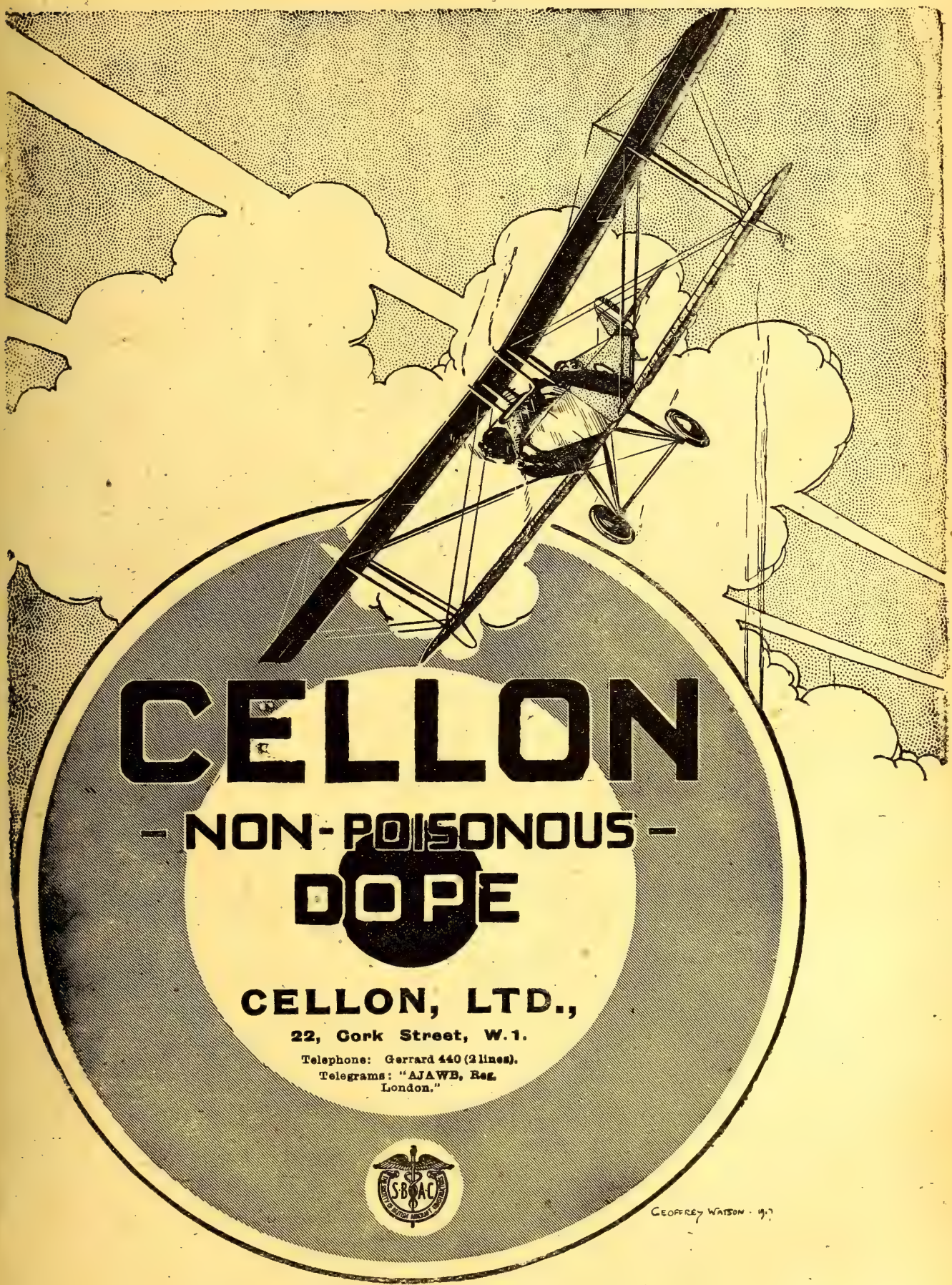
In the midst of the wholesale disorganisation and crumbling of our life in Russia and the weakening of all creative powers, it is surprising and comforting to find near Moscow such deep creative work so full of confidence and thorough knowledge as this work which is going on among the aviators.

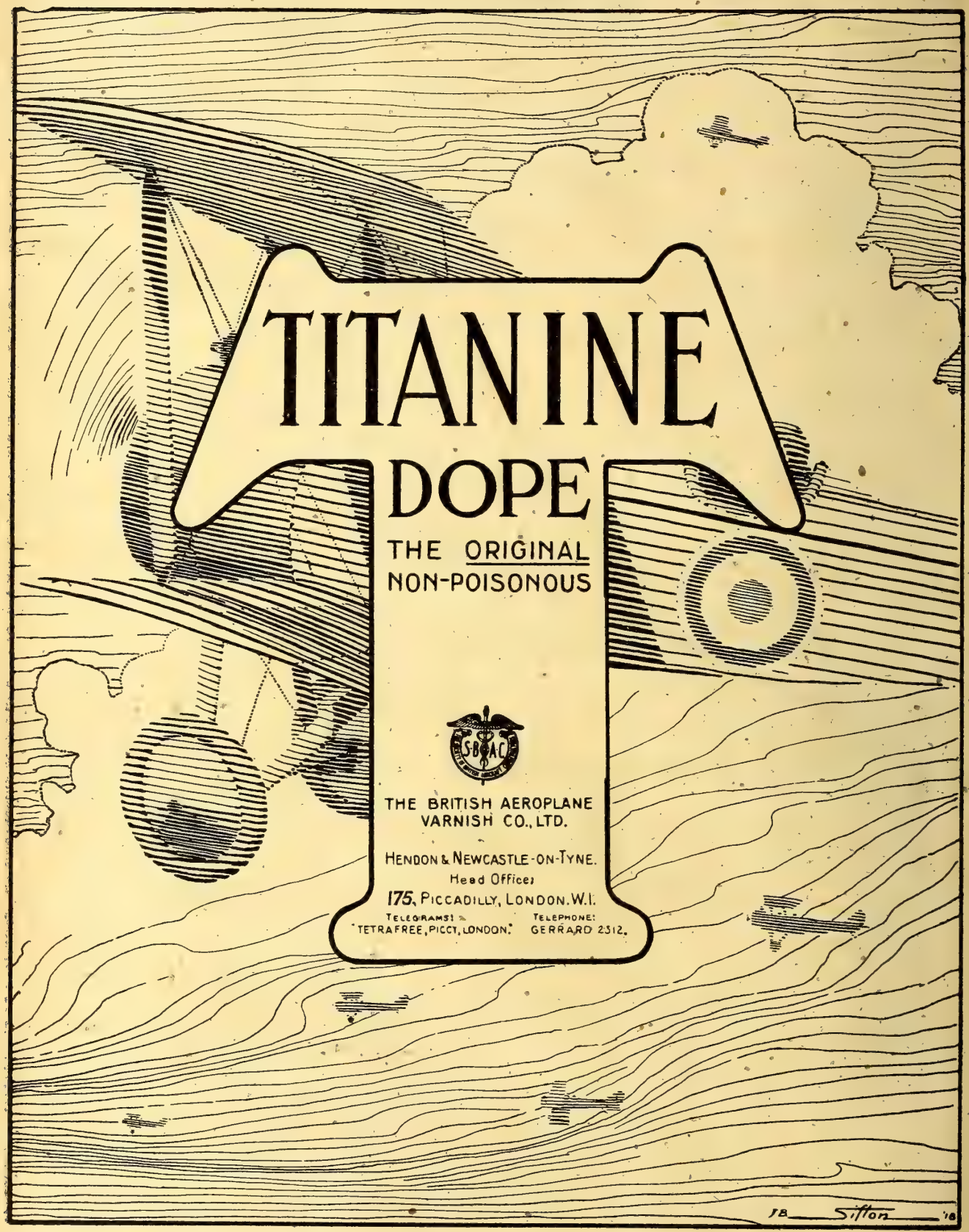
[What a pity that all these fine qualities were not used to win the war.—Ed.]

HOLLAND-LONDON AERIAL POST.

A Reuter's message of July 29th states that, according to a statement made by the Director-General of Posts and Telegraphs, the Dutch postal authorities are negotiating through the Foreign Office with the British Government regarding the possibility of an aerial post to and from London.

[Would British Naval aeroplanes, calling at Dutch ports for mails, be liable for internment?—Ed.]


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AIRCRAFT FINANCE

CURRENT TOPICS.

Having regard to the fact that there is a holiday atmosphere almost everywhere the Stock Exchange is remarkably active, and there are few things that have escaped the buoyancy. There people who are making money out of the war are not investing the whole of it in War Bonds; this is pretty evident from the volume of business in investment, semi-investment, and speculative securities; but, as the weekly Treasury returns show, the nation is receiving quite a fair amount of money each week for the purpose of conducting the war.

Government Want More Money

So long as there is not a serious falling off in this respect, little need be said. But should there be any material reduction in the purchases of the War Bonds, the position might become very meancing. In proof of that assertion one has merely to consider the new vote of credit for £700,000,000 submitted to the House of Commons. This will enable the Government to carry on the war till the end of October. War is an expensive luxury.

How Not to do it.

It is easy to criticise, as everyone realises, and to criticise a Government is, perhaps, a fashionable trait nowadays. Fortunately or otherwise all of us do not care a rap for fashion. However, it was necessary to discuss herein a few weeks ago the case of a big manufacturing concern, employed on vital war output, which, on the one hand, was pestered by one Government Department for an immediate payment, but, on the other hand, could not comply because another department was not paying out expeditiously enough, and because its bankers could not grant further credit.

Departmental Efficiency.

From our correspondence this is not, unfortunately, an isolated case. There are other manufacturers dealing with essential war work who are being deluged with demands from one department and yet cannot obtain payment from another department. It is a ludicrous position; at the same time very serious. How can anyone be expected to accomplish the very best for the Government in such circumstances? It is not business. What is lacking is co-ordination and business acumen. This lack of co-ordination means a loss to the nation either directly or indirectly; it denotes an absence of efficiency, and without efficiency we are told we cannot win this war.

Sunbeam Shares Strong.

One of the outstanding features in the group of aircraft and kindred shares has been Sunbeam Motors. For no apparent reason they rushed up several shillings to 81s. Excellent results are expected of the company in respect of the current year's operations; they will be published in about a couple of months. There has also been a recovery in Darracq shares brought about by the removal of the big German gun out of range of the capital. The possibility of damage to the company's works from this bombardment was mentioned herein a few weeks ago in explanation of the set-back in the shares.

Armstrongs a Good Investment.

Vickers' shares have not lost heart in spite of the absence of any sensational profit statement accompanying the interim dividend statement. Nor did the dividend prove as satisfactory as had been looked for; it is still being paid on the old basis free of income-tax. On the other hand, considerable interest has been taken in Armstrong-Whitworths which constitute an excellent investment.

Making a Market in Whiteheads.

Attempts are now being made to create a market in the ordinary shares of the Whitehead Aircraft Co. In view of the recent remarks in this column, this development is of more than ordinary interest. So far not much success has been attained; the price was nominally 20s. to 20s. 6d. "with more sellers than buyers" to use a House term. If the parties concerned plod on, there must be a market ultimately in the shares.

A Serious Disability.

This is just what is needed. Whether the shares command a high, low, or a moderate price will be determined by time and circumstances. One is inclined to believe that those who subscribed to the shares will welcome this present attempt at the creation of a market. Without any real market in the Stock Exchange holders of the shares would be in an uneviable state of uncertainty, ignorant of the realizable value of his or her investment. As everyone knows, one of the principal merits of an investment is its degree of marketability.

Selling at a Loss.

By the way, these particular shares were offered for subscription early in the year at 21s. 6d. They are ordinary shares carrying cumulative rights to 10 per cent. dividend each year and also rights in the participation of additional profits. The fact that they have been dealt in below the price of issue is not at all pleasant to reflect on. What intrinsic merit they possess will be revealed when the company's report is published; they may be reasonably valued at 20s. 6d.; they may, on the contrary, be undervalued. We do not profess to know, but one is inclined to suspect that the fact that no market had been created for them has been a serious mistake.

Record of Brown Bros.

There is revealed a further increase in the profits of Brown Bros. whose business before the war centred in cycle parts and accessories. The total of £42,278, compares with £40,715 and with an average of about £27,000 in pre-war days. The dividend was 7½ per cent. for the six years to 1915; for 1916, it was raised to 10 per cent. by the payment of a bonus both being free of tax. The 10 per cent. free of tax is repeated again, while £10,000 is again added to the reserve, making that fund £80,000, which contrasts with an authorised capital of £250,000. A slightly larger balance is carried forward.

Shell Oil Company.

Sir Marcus Samuel, Bt., presiding at the shareholders meeting of the "Shell" Transport and Trading Co., which, as everyone knows, is the one and only rival of the great Standard Oil Trust, had some interesting things to say. In connection with aviation he remarked to the shareholders:—

"There is one development in which your interests are concerned, and that is the expansion of aviation. Great progress has been made in aviation. The employment of twin or sometimes triple engines has attained a measure of safety which probably none foresaw. There appears no limitation to the practical uses to which aviation may be put after the war. Experience has proved beyond cavil that Shell spirit derived from our fields in Sumatra has no rival in quality. This company possesses an invaluable asset in owning large supplies of the finest motor spirit yet discovered. In this, as in other directions, we are keeping well abreast of the times in providing world-wide facilities for its supply."

B.S.A. Shares Prominent.

Increasing interest is being taken in the shares of the Birmingham Small Arms Co., which, apart from the manufacture of arms, is largely employed in the construction of aeroplanes and parts. At present, the £1 shares are commanding about 73s., which represents, on the last dividend, a yield to the purchaser of 5½ per cent., free of income-tax, equal to about 7½ per cent. gross. It is not so much the fairly high yield as the possibilities of a bonus that prompts the buying.

Position Analysed.

The concern owns the Daimler Motor Co., which capitalised a portion of its reserve fund a month or two ago. This meant a great deal for the B.S.A., which received about 600,000 £1 shares out of the deal. It is calculated that the B.S.A. Company's reserve must have been raised to a very high figure as a consequence. In a couple of months the results will be made public, and something very pleasant seems to be looked for. In the meantime, the following figures relating to the past three years' operations are instructive:—

	1914-5	1915-6	1916-7
	£	£	£
Profit	383,200	359,000	406,800
To Reserve	133,500	150,000	150,000
Dividend	20%	20%	20%

Vickers' New Powers.

There has been heard before Mr. Justice Eve a petition on behalf of the company to confirm special resolutions passed at extraordinary meetings that the memorandum of association of the company with respect to its objects be altered by the addition of the following clauses:—

(g) To acquire on any terms, establish, or institute and carry

on any business or industry, whether manufacturing or otherwise, which may be calculated to turn to account, or render profitable, or avoid apprehended waste or loss of, or in connection with, any premises, plant, machinery, implements, utensils, or stock erected, acquired, or manufactured for or in connection with the company's business, and to continue, develop, work, carry on, and enlarge any such business or industry as aforesaid.

(h) To form any company or companies for the purpose of acquiring all or any of the property, rights and liabilities of this company, or for any other purpose which may seem directly or indirectly calculated to benefit this company.

The reason for the proposed alteration was that Messrs. Vickers (Limited) had been engaged ever since the beginning of the war in the manufacture of an enormous quantity of war material, and for that purpose they had acquired machinery, plant, implements, and so forth, and their object was to turn these to account by a proper use thereof when the supply of munitions had become unnecessary or considerably diminished at the end of the war. Otherwise they would be left with the greater premises which had been acquired for the purpose of munitions, and would no longer be so used, and the machinery and plant which could not be employed for the purpose desired, or for which they were fit. The alteration was sanctioned.

HOLZAPFELS ANGLICISED.

For the purpose of obtaining the necessary sanction to change the name, shareholders of the Holzapfels, Ltd., were gathered together last week. The Chairman said:—"It has long been evident that the German name under which it has been known hitherto was prejudicial to our interests and has stood in the way of increasing and even maintaining our business. The change has been contemplated for some time, but it has not been possible until now to take the necessary steps for carrying it into effect, because the change could not be made without the approval of the Board of Trade, and that Department was not prepared to assent until it was satisfied that the company was no longer controlled by enemy aliens or naturalised British subjects of alien origin. An inquiry ordered by the Board of Trade has now satisfied the Board upon this point, and they have given provisional consent to a change of name.

NO FOREIGN ELEMENT NOW.

"Your directors have been engaged since the beginning of the year in the task of eliminating the foreign element which, rightly or wrongly, caused the company to be looked upon with suspicion. The board consists now exclusively of British born subjects, and of the share capital none is held by enemy aliens, and less than 6 per cent. by British subjects of enemy origin."

COMPANY ANNOUNCEMENTS.

The files of the following new companies are available for inspection at Somerset House.

NEW COMPANIES REGISTERED.

RADIO ELECTRIC CLOTHING CO., LTD.—Private company. Registered July 20th. Capital, £10,000 in £1 shares (5,000 10 per cent. pref.). To carry on the business of manufacturers of and dealers in electrically-heated clothing and all kinds of devices for lighting or heating by electricity, etc. The subscribers (each with 5 ordinary shares) are:—Carl Magnus, Holmquist, 4, Grange Road, Ealing, W., electrical engineer; James Guidici, 57, Uxbridge Road, Ealing Broadway, W., business manager. The first directors are to be appointed by the subscribers. Solicitor: L. C. Tree, 61, Carey Street, W.C.

THE CELLULOSE AFFAIR.

At the close of a debate on the financial position in the House of Lords on August 5th, a discussion arose on the charges brought against the British Cellulose Company.

In the House of Commons, on August 5th, Mr. Kellaway (Parliamentary Secretary, Ministry of Munitions) informed Col. Sir F. Hall that the original contract for the supply of cellulose acetate was made by the War Office, and was inherited by the Ministry of Munitions when it became responsible for aircraft production in 1917. The Ministry of Munitions' dealings had been with the British Cellulose Company, and no financial assistance had been given to the Cellonite Company of Basle. He had no information as to the amount of German capital invested in the latter company. In view of the report of the Select Committee on National Expenditure in relation to this contract he was appointing a committee to consider and report on the criticisms and recommendations made therein. Until he received such report he could make no statement as to future action.

The following report is reproduced with acknowledgments from the "Daily Telegraph" of August 6th:—

In the House of Commons, at a late hour last night, Sir W. Bull called attention to the fifth report of the Committee on National Expenditure, in which he said there were certain allegations made against the British Cellulose Company. The members of the board of that company were men of honour, holding important positions in various concerns, and they asked that an independent tribunal should try their case and take evidence on oath. The directors of the company thought they were doing a very patriotic duty in bringing cellulose to this country. It had been turned into a valuable commodity, and was used for the construction of aeroplanes, being essential for the manufacture of dope. Out of their own money these gentlemen found over £1,500,000 to set up works. All they asked was that the House and the Press should suspend judgment until their side of the case had been heard. This was an extraordinary invention, and as a result glass that would bend in any direction had been practically turned out. In addition, it would make synthetic silk of the finest quality and unbreakable films.

Col. G. Collins, as chairman of the Committee on National Expenditure, said he was sure the request to suspend judgment on the subject would be appreciated by the House. He and his colleagues were prepared to justify their report. He denied that he issued a copy of the report to the Press before it was published, though he admitted sending a copy to the Press with certain sentences underlined. It was a long report, and he conceived it his duty thus to draw attention to salient passages.

Mr. Kellaway, on behalf of the Ministry of Munitions, said the contract was originally entered into by the War Office, which felt it was undesirable to be dependent upon foreign resources for cellulose acetate. After prolonged negotiation works were erected in this country, but it was not until February, 1917, that the Ministry of Munitions had anything to do with it. They then took over the contract and its responsibilities. The demand for cellulose acetate went up by leaps and bounds; the production was increased twenty times; and it followed that the expenditure increased by far more than was anticipated when the contract was made. The principle of the process had since been adopted by America, France, and Italy, which showed that the broad lines pursued by the Government were absolutely justified. However, in view of the conclusions arrived at by the Committee, the Ministry had decided to set up a competent body to examine the recommendations and to report upon them. When they had received that report they would not hesitate to take action.

Mr. H. Samuel said a departmental inquiry by the Ministry of Munitions could not satisfy either the company or the House.

Mr. Bonar Law said it was very easy long after the event to look upon transactions of this kind and regard them as entirely foolish, without putting themselves in the position of those who knew that they must get the particular commodity, and must make certain of getting it at whatever price. That was the justification which would be made by the War Office. When this transaction came to the Treasury, which it did as an accomplished fact, they felt, as the Select Committee felt, that it was a contract which was very difficult to justify. What the Government had to do was to make the best arrangement possible now in view of what had happened before. So far as the recommendations of the Committee were concerned, what the Ministry of Munitions had promised to do was sufficient and all that could be done. It was in the interests of the company that the whole matter should be sifted in such a way that the real facts could be judged. He would undertake that an inquiry on those lines should be held, and he hoped to announce before the adjournment the form of Committee he would recommend for the purpose.

The "Daily Chronicle" of Aug. 5th says:—

The Swiss company, having secured the contract for making cellulose in England, and until such time as it could set up works to import from Basle, registered in March, 1916, the British Cellulose and Chemical Manufacturing Company. The promoters were the owners of the Swiss company, Dr. Camille Dreyfus, Dr. Henry Dreyfus, M. A. Clavel, all of Basle, whose address was given as 11, Waterloo Place. The capital was £4,000 in 160,000 shares of 6d. each, and the holders were as follows:—

Vickers, Ltd.	19,800
Sir Sam Hughes, Major-General	1,000
E. Robson, 27, Bevis Marks, E.C.	1,620
Sir A. Trevor Dawson, 2, Green Street, Grosvenor Square	2,104
Lt.-Col. Grant Morden, Heatherden Hall, Iver Heath, Bucks	1,705
G. Holt Thomas, 27, Buckingham Gate	1,600
C. W. Small, 2, Austin Friars	800
Capt. Eric Long, Rood Ashton, Wilts	400
F. W. Ashe, c/o Union Bank of Canada	400
Sir M. Mitchell-Thomson, Bt.	1,200
Col. H. H. Mulliner, 72, The Albany	400
Berthold Kitzneger, 4, London Wall Buildings	4,300
Harry M. Isaacs, 4, Eastcheap	2,000
W. H. Trinder, shipowner, Baltic House	200
London and Colonial Investment Corporation	450
Charles L. Sampson, solicitor, and James Kershaw, solicitor, 6, Austin Friars	720
C. Mendel, 22, Davies Street, W.	200
Moss S. Myers, stockbroker, 6, Throgmorton Street	630
Prudential Trust Co., Ltd., 64, Cornhill	40,470
Dr. Camille Dreyfus, Dr. Henry Dreyfus, and Alexander Clavel, Basle	79,998
Granville Tyser, 11, Great St. Helen's (gentleman)	1
F. G. Browne, 108, Goodrich Road, Dulwich (gentleman)	1

The directors were Dr. Camille Dreyfus, Dr. Henry Dreyfus, Alexander Clavel, Rudolph La Rahe, of Basle, Sir A. Trevor Dawson, Lt.-Colonel Morden, E. Robson, and Eugene Bloch, 6, Rue de Buzenval, Paris. The secretary was M. Boris Berliaud.

(Continued from page 470.)

AIR MINISTRY, August 2nd.

R.A.F.—Following temp. appts. are made:—Staff Officers, 2nd Cl.—Capt. (temp Maj.) H. R. Bently, April 1st; Maj. H. Ingram, June 26th; Capt. E. O. Grenfell, M.C., and to be temp. Maj. whilst so empld., vice Capt. (temp. Maj.) C. E. Foggin, July 13th; the date of appt. of Maj. A. J. W. Barmby is May 3rd, and not as stated in "Gazette" of July 2nd.

Staff Officers, 3rd Cl.—And to be temp. Capts. whilst so empld. if not already holding that rank:—Lt. D. N. Thomson, M.C., April 1st; Lt. (temp. Capt.) G. K. Macdonald, June 11th; Lt. (temp. Capt.) T. L. F. Burnett, Sec. Lt. A. B. Staples, June 26th; Capt. H. M. Massey, M.C., June 30th; Lt. (temp. Capt.) G. A. Scott, Capt. (temp. Maj.) A. P. Davidson, and to relinquish his temp. rank; (Q.) Lt. C. G. Turpin, August 3rd.

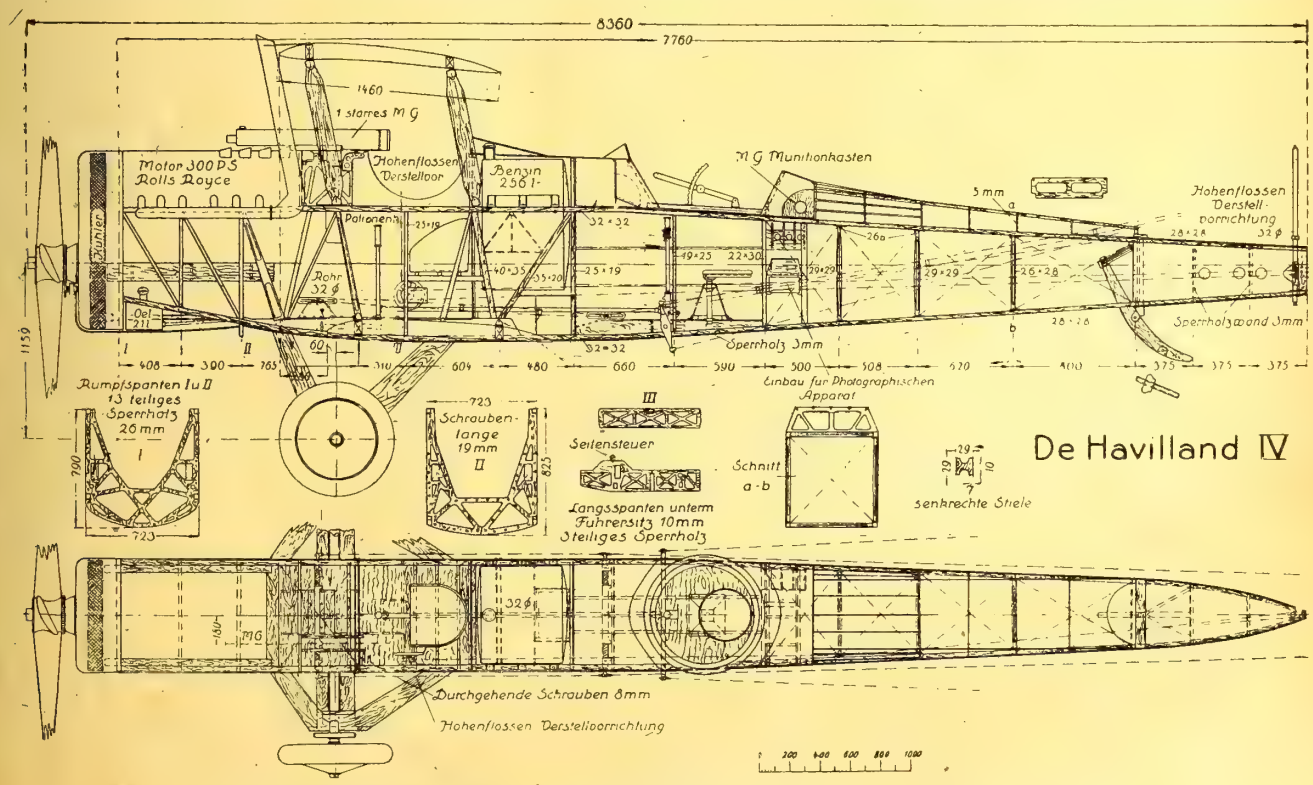
FLYING BRANCH.—Lts. to be temp. Capts. whilst empld as Capts. (A. and S.):—W. Pallister, July 6th; E. T. Morrow, July 13th; R. J. Elliott, (Hon. Capt.) J. E. L. Hunter, July 16th; (Hon. Capt.) E. M. King, D.F.C., July 23rd; W. Walker, July 25th; (Hon. Capt.) E. Anthony, July 26th; Lt. (Hon. Capt.) H. N. Witting to be temp. Capt. whilst empld. as Capt. (K.B.), June 30th. The follg. Lts. (Obsr. Officers) to be Lts. (A. and S.):—V. H. Legg, May 3rd; E. J. O'ft Ross, May 4th; C. E. B. Corbould, M. R. D'Arcy, May 27th; W. H. Davies, H. G. D. Ereckson, J. C. Thompson, May 31st; H. J. B. Bain, June 4th; G. W. Butchart, June 11th; A. L. Taylor, June 13th; Sec. Lts. (late Gen. List, R.F.C., on prob.) confirmed in their rank as Sec. Lts. (A. and S.):—H. R. Scobel, May 4th; H. V. D. Read, May 5th; C. E. Watson, C. E. Tidy, June 14th; E. Barker, July 3rd. The follg. are granted temp. commns. as Sec. Lts (A. and S.):—F. O. Sprinks (temp. Capt., R. Ir. Fus.), and to be Hon. Capt., May 7th; W. J. Cooke (temp. Lt., Leins. R.), and to be Hon. Lt., May 9th; E. Knowles (Lt., E. Lan. R., T.F.), and to be Hon. Lt., May 23rd; P. R. Cook (Lt., R.F.A., Spec. Res.), and to be Hon. Lt., May 24th; G. W. Neill, M.C. (Lt., Leins. R.), and to be Hon. Lt. (since killed); J. E. Workman (temp. Sec. Lt., Glouc. R.); E. E. Lickfold (temp. Lt., Br. W.I.R.), and to be Hon. Lt., May 25th; L. B. E. Lloyd (Lt., Lord Strathcona's Horse, C.E.F.), and to be Hon. Lt., May 26th; V. W. Helps (Lt., Som. L.I., T.F.), and to be Hon. Lt.; F. W. C. Elles (Sec. Lt., I.A.R.O.); E. C. Brown (temp. Sec Lt., Som L.I.), May 27th; W. V. Ribbins (Sec. Lt., I.A.R.O.); E. L. Ridley (Lt., R. Muns. Fus.), and to be Hon. Lt.; G. W. Heap (Sec. Lt., Lan. Fus., Spec. Res.), May 28th; C. H. Stewart, M.C. (Sec. Lt., Welsh R., T.F.); E. C. Kelly (temp. Sec Lt., Leins. R.), May 29th; A. Inglis (Lt., R. Sc. Fus., T.F.), and to be Hon. Lt.; W. H. Cole (Lt. R. Ir. Fus., S.R.), and to be Hon Lt.; A. A. J. Poole (temp. Lt., Rhodesian Native R.), and to be Hon. Lt.; W. A. Moore (Lt., Rif. Brig., Spec. Res.), and to be Hon. Lt., May 30th; H. T. Partridge (Lt., R. Suss. F., T.F.), and to be Hon. Lt.; P. B. Davies (Lt., Welsh R., T.F.), and to be Hon. Lt.; A. J. Forbes (Sec. Lt., R. N. Devon Yeo, T.F.), May 31st; R. J. V. Pulvertaft (Lt. R. Suss. R., Spec. Res.), and to be Hon. Lt.; J. G. Wilson (temp. Sec. Lt., attd. S. Lan. R.); F. L. Clark (temp. Sec. Lt., attd. E. Surr. R.); A. E. Masters (temp. Sec. Lt., attd. R Suss. R.), June 3rd; N. T. Kennard (temp. Sec. Lt., attd. R. Suss. R.); D. M. Davies (Lt., Pembroke Yeo., T.F.), and to be Hon. Lt., June 10th; J. C. Kennedy (temp. Lt., Arg. and Suthd. Highrs.), and to be Hon. Lt., June 12th. The follg. Cadets are granted temp. commns. as Sec. Lts. (A. and S.):—E. R. Stafford, April 27th; A. E. Potter, May 5th; M. Tait, D. M. David, May 10th; M. C. Dudding, May 12th; G. W. A. Onions, May 13th; J. B. Friend, A. J. Black, May 20th; H. Williams, May 23rd; J. Humberstone, May 24th; A. Hadden, S. G. Shand, May 25th; W. Massey, W. Long, May 27th; N. P. Longden, S. S. Rosenheim, L. W. G. Ward, May 28th; B. W. Hammond, A. E. Button, May 29th; V. G. A. Bennett, E. J. Christie, C. W. Grant, G. A. R. Shilson, C. A. Soughurst, May 30th; W. H. Samuel, K. Bannister, W. R. Ayling, E. L. Wynn, N. E. Chapman, P. E. Groom, A. W. Sumpter, May 31st; D'A. H. Jones, S. Gibbs, June 3rd; H. Toms, June 8th; J. C. Bishop, E. J. Storey, A. J. M. Medcalf, June 9th; F. F. Weingott, June 10th; P. G. Spargo, A. M. Verity, June 11th; C. E. Watson, June 14th; G. S. Walpole is granted a temp. commn. as Sec. Lt. (Dir.), July 20th. The follg. are granted temp. commns. as Sec. Lts. (K.B.):—A. Schofield (Sec. Lt., R.G.A., Spec. Res.), S. C. W. Lovejoy (temp. Sec. Lt., York and Lanc. R.), R. A. Henry (Lt., R.G.A., Spec. Res.), and to be Hon. Lt., June 25th. Sec. Lts. (latt Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (Obsr. Officers):—W. Hewitt, July 26th; A. Provan, July 31st; H. C. Maller, August 3rd. The follg. are granted temp. commns. as Sec. Lts. (Obsr. Officers):—P. F. Fenner (temp. Sec. Lt., R.W. Kent R.), July 26th; J. R. Fox (Sec. Lt., Manch. R., T.F.), July 27th; G. E. Lange (temp. Capt., Br. W.I.R.), and to be Hon. Capt., A. G. Braham (Sec. Lt., Yorks L.I., T.F.); G. E. Hunt (Sec. Lt., Yorks L.I., T.F.), G. Parker (Sec Lt., W. Rid. R., T.F.), G. N. Tresidder (Lt., E. Ont. R., C.E.F.), and to be Hon. Lt., July 31st.

The follg. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers):—H. Grant, J. W. Bowler, F. W. R. Thomas, H. G. Penwarden, L. J. Lomax, J. F. Bates, April 4th; E. W. Reynolds, F. E. Horley, April 23rd; A. A. Butt, W. J. Barker, A. J. Cripps, F. A. S. Fletcher, April 25th; J. Ll. Rhys, J. W. Rhodes, C. Brears, May 13th; W. Mann, J. Chacksfield, May 23rd; J. C. M. Hatfield, L. G. Crossbey, W. V. Pearce, J. Anderson, F. S. Brooks, June 2nd; H. A. Boniface, E. Smith, C. G. Russell, W. T. Madge, T. H. Swann, July 20th.

Capt. C. W. F. Morgan relinquishes his commn. on account of ill-health, and is granted the hon. rank of Capt., August 3rd. Lt. A. J. Golding relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lt., August 3rd; Lt. C. de L. Shortt relinquishes his commn. on account of ill-health contracted on active service, August 3rd. The follg. Lts. resign their commns.:—T. H. Blair, G. A. F. Layton, August 3rd. Lt. B. F. Stein relinquishes his commn, having been found permanently unfit as Pilot or Obsr., August 3rd. The follg. Sec. Lts. relinquish their commns., having been found permanently unfit for further instruction as Pilots or Obsrs.:—R. S. McKim, W. L. Thomas, H. C. Lewis, L. Fewkes, R. S. Pilcher, R. H. Wright, L. C. Eginton, G. Silverman, A. D. Gudger, D. Ferguson, H. L. Denison, C. N Gould, R. A. Bertram, J. R. Aitken, D. C. Cooney, C. Kay, H. McCallum, C. R. Kent, August 3rd. Surname of Temp. Capt. E. C. Johnston is as now described, and not as stated in the "Gazette" of July 9th; surname of Temp. Maj. W. W Leete is as now described, and not as stated in the "Gazette" of July 12th; notification of July 12th concerning Sec. Lt. C. J. Hooley is cancelled; notification of July 16th concerning Sec Lt. C. L. H. Johnson is cancelled; notification of July 23rd concerning Capt. H. N. Whiting is cancelled.

ADMINISTRATIVE BRANCH.—R. F. Williams (late Maj., L'pool R.) is granted a temp. commn. as Maj., and to be temp. Lt.-Col. while empld. as Lt.-Col., July 15th; Lt. (temp. Capt.) S. T. Grant to be temp. Maj. while empld. as Maj., July 26th; Lt. A. E. Kennedy to be temp. Capt. while empld. as Capt., August 1st; G. F. Law (Sec. Lt., A.S.C.) is granted a temp. commn. as Lt., June 1st. (Substituted for notification in "Gazette" of July 23rd.) F. Dance (Lt., Middx. R.) is granted a temp. commn. as Lt., June 21st. Lts. (A. and S.) to be Lts.:—P. H. S. Tozer, May 30th, E. D. S. Groome, July 22nd; C. Bell, July 23rd; Lts. (O.) to be Lts.:—J. E. G. O'Byrne, May 1st; R. V. Hope, June 6th; (Hon. Capt.) C. H. M. Willson, and to be Hon. Capt., July 24th. Sec. Lts. to be temp Lts. while empld. as Lts.:—R. J. H. F. Beresford, May 22nd; (Hon. Lt.) A. T. le F. Johnson, June 9th; E. R. Wood, July 9th; Sec. Lt. S. C. Player (late Gen. List, R.F.C., on prob.), is confirmed in his rank as Sec. Lt., June 18th; G. H. Tait (Sec. Lt., Cam'n Highrs., T.F.), to be Sec. Lt., June 27th. The follg. are granted temp. commns. as Sec. Lts.:—J. N. Dillon, July 20th; A. E. S. Baker, E. E. Blake, A. J. Brown, M. Cooper, A. Dalziel, J. G. Macksey (late Sec. Lt., Middx. R.), A. G. Groom, G. E. Hunting, N. K. Lawton, W. Rollinson, J. Sewell, W. S. Steljes, C. R. Tweeddale, S. Warburton, H. A. Williams, E. A. Wilson, August 1st. The follg. Cadets are granted temp. commns. as Sec. Lts.:—J. C. Rowell, April 5th; S. O. Clark, April 26th. The follg. Sec. Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Sec. Lt.:—F. H. Gain, H. K. Loosen, C. G. de Montalt, R. S. V. Morris, R. W. Royce-Riddall, August 3rd; Sec. Lt. A. B. Richardson relinquishes his commn. on account of ill-health, Augst 3rd. The follg. Lts. resign their commns:—C. H. A. Morgan, C. Sidebottom, August 3rd.

TECHNICAL BRANCH.—Capts. to be temp. Majs. whilst empld. as Maj.:—L. M. Lilley, June 18th; W. Thomas, M.C., July 27th; Lt. (temp. Capt.)



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C.D.C

S. Curtis retains his temp. rank whilst empld. as Capt. from (Ad.), April 1st. Sec. Lts. to be temp. Lts. whilst empld. as Lts. :—E. W. Dexter, July 1st; A. L. Cockburn, July 9th; H. Bradford, July 23rd. Sec. Lts. (A. and S.) to be Sec. Lts. :—B. V. Brown, B. J. Parkes, July 27th. Sec. Lts. (Ad.) to be Sec. Lts. :—J. R. Johnson, June 1st; H. C. Hook, July 8th; R. A. Ford, July 10th; A. M. Falconer, July 13th; N. D. Lees, July 17th. Sec. Lts. (late Gen. List, R.F.C., on prob.) confirmed in their rank as Sec. Lts. :—R. S. McCormac, April 1st; E. Bushell, C. S. Armishaw, July 27th; R. Hall (temp. Sec. Lt., Leic. R.) is granted a temp. commn. as Sec. Lt., May 1st. Cadets granted temp. commns. as Sec. Lts. :—R. E. Lane, April 1st; H. W. Prickett, May 19th; Sec. Lt. J. G. Williams relinquishes his commn. on account of ill-health, and is ganted the hon. rank of Sec. Lt., August 3rd.

Medical Branch.—J. A. Giles is granted a temp. commn. as Capt., J. D. George is granted a temp. commn. as Lt., August 1st.

Memoranda.—The follg. Capts. are granted the temp. rank of Majs., but without the pay and allowances of that rank, whilst specially empld. :—W. R. Mackenzie, D.S.C., J. Weston, August 3rd. The follg. are granted the temp. rank of Capt., but without the pay and allowances of that rank, whilst specially empld. :—Sec. Lt. (Hon. Lt.) A. L. C. Fuller, Lt. H. E. Went, August 3rd. The date of appt. of the follg. officers is April 1st, and not as stated in "Gazette" of July 23rd :—As Lt.-Cols.—W. D. Beatty, H. T. Tizard. As Capts.—J. C. Briggs, R. C. Gallop, P. M. E. Impey, L. B. W. Jolley. The notification of July 23rd concerning the follg. Officers is cancelled :—Maj. C. L. Hardy, Capt. H. B. Dresser, Capt. F. M. Williams. The notification of July 5th regarding Lt.-Col. S. H. B. Harris is cancelled.

War Office, August 3rd.

Regular Forces.—Staff.—Special Appointments.—(Graded for pay "F.F." R. Warrant, July 9th, whilst comdg. a Sqdn. of an Officer Cadet Bn. R.F.C.)—Capt. G. L. Watson, W. York. R., T.F., a Flying Officer (Obsr.), vice Capt. N. G. Darnell, R. Innis Fus., Jan. 24th.

Comdg. a Sqdn. of an Officers Tech. Trg. Wing, R.F.C.—Lt. G. W. Cox, R. Highrs., T.F., an Equipt. Officer, 3rd Cl., and to be temp. Capt. whilst so empld., Feb. 15th.

R.F.C.—Mil. Wing.—Sqdn. Comdr.—Capt. M. G. B Copeman, Leic. R. from Flt.-Comdr. and to be Maj. while so employed from Jan 1st to March 31st.

FROM THE COURT CIRCULAR.

Buckingham Palace, July 31st.

The following officers were severally introduced into the presence of the King, when His Majesty conferred decorations as follows :—

The Distinguished Service Cross.—Capt. Alan Waistell, R.A.F.; Capt. Cyril Brewerton, R.A.F.; Capt. Garrett O'Brien, R.A.F.; Capt. John Gamon, R.A.F.; Capt. Thomas Warne-Browne, R.A.F.

The Military Cross and Bar.—Lt. Lionel Hooton, R.A.F.

The Military Cross.—Capt. Charles Hoyle, Yeo., attd. R.A.F.; Capt. George Johnson, R.A.F.; Lt. Percy Hobson, R.A.F.; Lt. Matthew McConville, R.A.F.; Lt. Josiah Morgan, R.A.F.; Lt. Finch Robertson, Essex Regt., attd. R.A.F.

The Board of Trade Silver Medal for Saving Life at Sea.

Capt. (then Lt.) James Gordon, and Leading Mechanic Sydney Anderson, R.A.F.

In May, 1917, Lt. Gordon, Leading Mechanic Anderson, another Lieut., and a Wireless Telegraphist were flying on a seaplane at a height of 1,200 feet, when they sighted an object on the water. They immediately descended, and the object was discovered to be an upturned float with two men on it. In spite of the rough sea, they landed their plane on the water close to the float, and on a second attempt succeeded in rescuing the men—an officer and an air mechanic, who had been without food or water for five and a half days. The plane was so damaged through landing in the heavy sea that it was unable to rise, and they, therefore, taxied for three miles with the boat leaking badly and shipping quantities of water over the bows. When the tail of the machine was filled with water they made distress signals, as a result of which assistance was obtained, and all the men, together with the seaplane, were brought to land.

Buckingham Palace, August 3rd.

The King received the Lord Weir (Secretary of State for the Royal Air Force) in audience this morning.

OFFICIAL COMMUNIQUES.

NAVAL.

Admiralty Communiqué.

August 2nd.—Detailed reports have been received from Royal Air Force units working with the Navy in the Mediterranean, Adriatic, and the Ægean. Anti-submarine and escort patrols have been well maintained in the Mediterranean and Adriatic.

As indicated in recent Italian official communiqués from Rome, our Adriatic formations have closely co-operated with the Italian air forces in raids on the Austrian naval ports of Cattaro and Durazzo, and in the land operations at Valona. In connection with the latter one of our machines was forced to land within the enemy lines, but both pilot and observer were rescued the following day on the Allies advancing and capturing an Austrian aerodrome.

In the Ægean a constant reconnaissance of the Dardanelles has been maintained. In two raids on Kuleli Burgas, on the Oriental Railway, direct hits were obtained on the railway station, which was much damaged. A raid on Karagatch station and the bridge which carries the Oriental Railway across the Arda resulted in direct hits on the line, close to the bridge, and among rolling stock. A raid on the railway station and bridge at Uzun Keupri resulted in damage to the station buildings. During dawn reconnaissance of the enemy coast north and north-west of Imbros, 13 caiques were observed. Bombs were dropped, damaging two and destroying a third. A new enemy aerodrome at Uzun Keupri was bombed, and photographs show much damage was done, one hangar being completely destroyed. A raid was made at dawn on July 26th on Nagara, and at night on Galata. A further raid on these two places was made during the night of July 28th. Over half a ton of bombs was dropped and large fires started. One of our machines failed to return.

The basin and dockyard at Constantinople was successfully bombed just after midnight on July 27th. Full details have not yet been received.

In Home waters during the period July 25th-31st anti-submarine, hostile aircraft, and escort patrols have been maintained. Submarines have been attacked with success.

Over 15 tons of bombs have been dropped on objects of military importance at Zeebrugge, Bruges docks, and Ostend. Enemy shipping has also been bombed, and a direct hit with a 230lb. bomb obtained on the stern of the leader of four enemy torpedo-boat destroyers. Columns of smoke were seen to arise, but mist obscured further observation.

Our bombing patrol and escort formations have been been attacked by enemy aircraft. Fifteen enemy machines have been destroyed and 12 shot down out of control. Five of our machines have failed to return—one of which is known to have landed in Holland. One of our seaplanes on patrol was shot down in flames. Two of the crew were drowned.

MILITARY.

G.H.Q. Communiqués.

July 30th, 7.52 p.m.—On the 29th inst. ground mist and low visibility interfered with artillery observation, but our bombing and fighting machines carried out their usual work.

Eleven tons of bombs were dropped on enemy dumps and billets, and 14 hostile aeroplanes were destroyed with the loss of two of our own machines.

During the night, in spite of unfavourable weather conditions, bombs were dropped by us on Bray and Bapaume

All our machines returned.

July 31st, 7.35 p.m.—On July 30th haze and ground mist again interfered with observation; but, nevertheless, a large number of successful photographs were taken by us, and over 11 tons of bombs dropped on enemy sidings and dumps

Rather more enemy machines were encountered, 15 being brought down and six driven down out of control.

Six of our machines are missing.

During the night 3½ tons of bombs were dropped by us without loss.

In addition to those already reported, a hostile machine was shot down by infantry fire on the 29th inst.

Aug. 1st, 8.20 p.m.—On July 31st heavy fighting took place in the air, with the result that 26 enemy machines were brought down and nine others driven down out of control.

Four of our machines failed to return.

Though observation was again difficult, many photographs were taken, and 15 tons of bombs dropped by us with good effect.

During the night over 23 tons of bombs were dropped by us without the loss of a machine. Several railways, including those at Cambrai and Lille, suffered very heavily, many direct hits being obtained and a number of large fires started.

August 2nd, 8.14 p.m.—On August 1st we dropped over 24 tons of bombs during the day. A large number of these were directed on a hostile aerodrome from a very low height in the course of a raid by two of our squadrons. Great damage was done to the hangars and living quarters on the aerodrome. Six hangars and 16 machines were set on fire, and one machine blown to pieces on the ground.

Eleven hostile machines were brought down in the course of the day's fighting, and three driven down out of control. One hostile machine was shot down in our lines by anti-aircraft fire, and a German balloon was brought down in flames by our aviators. Two of the enemy night-bombing machines were shot down over their own aerodrome by our night-fighting pilots.

Two of our machines are missing.

During the night, in spite of unfavourable weather conditions, 10 tons of bombs were dropped by us on railway lines, stations, and aerodromes. The same aerodrome which had been attacked by day was again heavily bombed.

All our night-bombing machines returned.

August 3rd, 8.15 p.m.—Low clouds and rain prevailed on August 2nd, and work in the air was carried on with great difficulty. Our machines, nevertheless, executed a large number of reconnaissances, and observed for artillery fire whenever the weather permitted.

Thirteen tons of bombs were dropped during the day, three tons of which fell on Bruges docks.

Very few enemy aircraft were encountered, but two hostile machines were brought down. One enemy balloon was shot down in flames.

All our machines returned safely.

At night no flying was possible.

August 4th, 7.37 p.m.—Rain and low clouds during the greater part of the day interfered with work in the air (? on August 3rd).

Five tons of bombs were dropped by our aviators, and seven hostile machines and one balloon were shot down.

In spite of a very dark night, five tons of bombs were dropped by us on the stations of Fives (south-east of Lille) and Steenwerck.

Two day-flying aeroplanes and one of our night-bombing machines are missing.

August 5th, 9.25 p.m.—Air operations on August 4th were again greatly hampered by clouds and rain.

Six hostile machines were brought down by us and one driven out of control. One hostile balloon was brought down in flames.

Some reconnaissances and artillery observation work was carried out, and six and a half tons of bombs were dropped by our machines.

None of our aeroplanes are missing. One of our machines reported missing on the 3rd inst. has now returned.

No flying was possible at night.

War Office Communiqués.

July 31st.—The G.O.C. Macedonia reports :—

During the period July 17th-26th we have destroyed seven hostile aeroplanes and brought down three out of control

Aug. 1st.—The G.O.C. Italy reports :—

During the month of July the Royal Air Force has destroyed 66 enemy aeroplanes and driven three down out of control.

During the same period four of our aeroplanes have failed to return.

August 3rd.—The G.O.C. Italy reports :—

During the past week the Royal Air Force have destroyed 14 enemy aeroplanes and one observation balloon, without loss to themselves.

Home Command Communiqué.

August 6th, 1 a.m.—Hostile airships approached the East Anglian coast about half-past nine last night (Monday), but have not penetrated far inland.

AIR FORCE.

Air Ministry Communiqués.

The following dispatches have been received from the Headquarters of the Royal Air Force, Independent Force, in France :—

July 30th.—On the night of July 29th-30th our machines attacked the railway stations at Offenburg, Rastatt, and Baden. Stuttgart and Söllingen were also attacked.

Three hostile aerodromes and numerous ground targets were bombed and subjected to machine-gun fire.

All our machines returned.

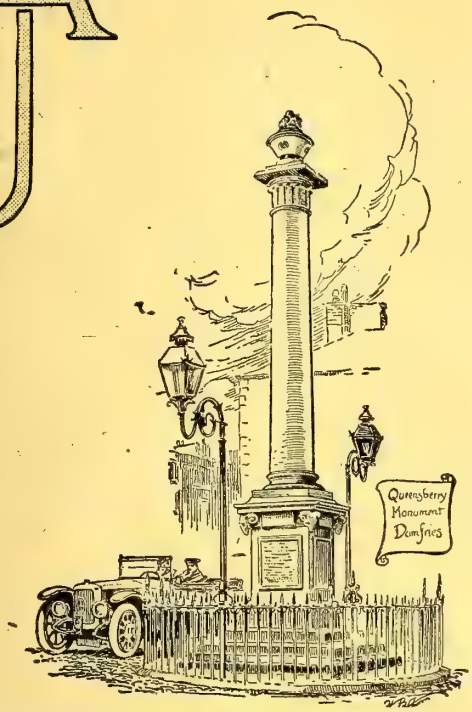
On the morning of the 30th inst. our squadrons successfully bombed the railway station at Offenburg. Good results were obtained.

In the course of the combats, three enemy machines were shot down and one other driven down out of control.

One of our machines is missing

July 31st.—In addition to the attack already reported on the 30th.

A-J



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inst., the station at Lahr (south east of Strassbrug was bombed. On the night of July 30th-31st our aeroplanes again proceeded to Stuttgart and dropped nearly two tons of bombs on the Basche Magneto Works, Daimler Works, and railway station. A fire broke out in the station.

Several bombs were dropped on Hagenau station and barracks, causing a heavy explosion.

Rémilly Junction and two hostile aerodromes were attacked with bombs and machine-gun fire.

On the morning of July 31st, at 7.30, one of our squadrons attacked Coblenz station. Owing to clouds, observation was impossible.

The station and factories at Saarbrücken were subjected to two attacks. The first formation encountered large (? numbers of) hostile scouts before reaching their objective. Bitter fighting ensued, in the course of which four of our machines were shot down. The remainder bombed their objectives, and, on their return journey, were again heavily attacked, losing three more machines. One hostile machine was disabled. The second attack, delivered later, was completely successful Bursts were observed in a factory.

In spite of attacks by hostile scouts, all our machines returned safely.

Aug. 1st.—On the morning of Aug. 1st one of our bombing squadrons started to bomb Cologne, but, finding it envoloped in clouds, returned, and dropped their bombs on the factories of Düren (about midway between Cologne and Aix-la-Chapelle), in one of which a fire broke out.

All machines returned.

A second formation attacked the railway workshops at Trèves. They were heavily attacked by large numbers of hostile machines. Three of the enemy were destroyed.

One of our machines has not returned.

THE CASUALTY LIST.

MILITARY.

Reported July 31st.

Canadian Force.—Accidentally Killed.—Scovil, Lt. E. M., N. B. Regt., attd. R.A.F.
Wounded.—Beveridge, Lt. G., Que. R., attd. R.A.F.
Missing.—Cyr, Lt. A. J., Can. For. Corps, attd R.A.F.
Previously reported Missing, now reported Prisoner in German Hands.—Eaton, Lt. E. C., Sask. R., attd. R.A.F.

Reported August 3rd.

Previously reported Missing, now reported Killed.—Krohn, Sec. Lt. E. O., R.F.C.
Australian Force.—Previously reported Missing, now reported Killed.—Hosking, Sec. Lt. T., F.C.
Wounded.—Smith, Lt. F. R., M.C., F.C.
Missing.—Nelson, Sec. Lt. R. C., F.C.
Canadian Force.—Missing.—Dougall, Lt. W., Sask. R., attd. R.A.F.

Reported August 5th

Correction.—Previously reported Missing, now reported Killed.—Fitzmaurice, Sec. Lt. A. H., R.F.C., should read Fitzmaurice, Lt. A. H., R.F.C.
Australian Force.—Previously reported Missing, now reported Killed.—Barry, Lt. O. C., F.C.
Finnie, Sec. Lt. A., F.C.
Nowland, Lt. G., F.C.

Reported August 6th.

Previously reported Missing, now reported Prisoner in German Hands.—Irvine, Sec. Lt. W. M., Northd. Fus., attd. R.F.C.

The Casualty List.

Casualties among Wt. Os., N.C.Os. and Men.
The Dates are those of the Official List.

Australian Imperial Force.
Accidentally Killed.

July 23rd.—F.C.—Stronach 1946 K. W.
Previously reported Prisoners of War, now reported Died as Prisoners of War in Turkish Hands.
July 23rd.—F.C.—Lord 23 W. H.; Munro 47 J.; Williams 16 L. T.

AIR FORCE.

Second List.—Reported July 31st.

Killed.—De Villiers, Lt. D. J. J., R.A.F.
Grady, Sec. Lt. J. F., R.A.F.
McGregor, Lt. D. M., R.A.F.
Vaucour, Maj. A. M., M.C., D.F.C., R.A. and R.A.F.
Rogers, Sec. Lt. A. F., R.A.F.
Weston, Sec. Lt. J. E., R.A.F.
Williamson, Lt. G. F. D., Black Watch and R.A.F.
Died of Wounds.—Allbutt, Lt. H. F., R.A.F.
Redmond, Lt. H. F., R.A.F.
Died.—Pollard, Sec. Lt. W. W., R.A.F.
Wounded.—Boyden, P/F/O R. H., R.A.F.; Hawkins, Lt. L., R.A.F.; Kelly, Lt. H. A., R.A.F.; Owen, Lt. W. T., R.A.F.; Rostedt, Sec. Lt. N. E., R.A.F.; Smith, Lt. T., R.A.F.; Tyllyer, Sec. Lt. J., R.A.F.
Missing, Believed Drowned.—Packe, Lt. R. C., R.A.F.
Missing.—Ballance, Sec. Lt. G., R.A.F.; Bingham, Lt. A. E., R.A.F.; Harston, Lt. S., R.A.F.; Moir, Lt. C. J., R.A.F.; Smith, Lt. J. L., R.A.F.; Turner, Sec. Lt. E. G., R.A.F.; Wilson, Lt. J. M., R.A.F.
Previously reported Missing, now reported Prisoners.—Hunt, Sec. Lt. K. P., R.A.F.
Reece, Sec. Lt. S. B., R.A.F.
Previously reported Missing, now reported Wounded and Prisoners.—Lawson, Sec. Lt. R. G., R.A.F.
Russell, Sec. Lt. D. J., R.A.F.
Previously reported Believed Wounded and Prisoner, now reported Wounded and Prisoner.—Hampton, Lt. P. R., R.A.F.

Reported Aug. 1st

Killed.—Callaghan, Maj. J. C., M.C., R.A.F.
Duncan, Sec. Lt. R. R., R.A.F.
Harris, Lt. S. E., R.A.F.
Hewens, Lt. F. A., R.A.F.
Kerruish, Lt. E. F., R.A.F.
Moxey, Lt. S., R.A.F.
Webb, Lt. P. F. H., R.A.F.
Died of Wounds.—Armstrong, Lt. G. P., R.A.F.
Wounded.—Bowker, Lt. R. C. S., R.A.F.; Bryan-Turner, Sec. Lt. A. O., R.A.F.; Dixon, Sec. Lt. C., R.A.F.; Htrman, Sec. Lt. L. W., R.F.A. (T.F.), attd. R.A.F.; Holden, Sec. Lt. G., R.A.F.; Sterling, Lt. L. A., M.C., R.F.A. (S.R.), and R.A.F.; Stuart, Lt. J., R.A.F.; Thompson, Sec. Lt. C. A. J., Ches. R. and R.A.F.
Previously reported Missing, now reported Prisoners.—Bull, Sec. Lt. F. J., R.A.F.
Law, Sec. Lt. C. B., Hussars and R.A.F.
Patenaude, Sec. Lt. J., R.A.F.
Smith, Lt. N. A., Manch. R. and R.A.F.
Previously reported Missing, now reported Believed Prisoner.—Robins, Lt. S. M., R.A.F.
Previously reported Believed Prisoners, now reported Prisoners.—Rainer, Sec. Lt. G. A., R.A.F.
Scott-Kerr, Lt. W. F., Loth. and Bord. Horse and R.A.F.
Previously reported Believed Prisoner, now reported Wounded and Prisoner.—Tylor, Sec. Lt. C. E., R.A.F.

Reported August 3rd.

Killed.—Calverley, Sec. Lt. O. L., R.A.F.
Chester, Lt. R. H. V., R.A.F.
Danby, Capt. C. D., M.C., R.E. and R.A.F.
Harrison, Sec. Lt. J., R.A.F.
Mallet, Sec. Lt. R., R.A.F.
Parsons, Lt. E., R.A.F.
Partridge, Lt. H. T., Suss. R. and R.A.F.
Thompson, Capt. C. R. J., R.A.F.
Wounded.—Biddlecombe, Lt. C. E., R.A.F.; Dance, Sec. Lt. C. C., R.A.F.; Hudson, Lt. G. A. F., R.A.F.; Posey, Lt. C. A., R.A.F.; Tarbolton, Lt. J. S., R.A.F.; Wilson, Sec. Lt. J. A., R.A.F.; Winbolt, Sec. Lt. R. J., R.A.F.
Missing.—Ankrett, Sec. Lt. H. H., R.A.F.; Arnott, Sec. Lt. R. A., R.A.F.; Cook, Lt. J. D., R.A.F.; Thomas, Sec. Lt. D., S. Lancs R. and R.A.F.; Whitehead, Sec. Lt. H. R., R.A.F.; Williams, Lt. F. S., R.A.F.
Missing, believed Killed.—Grahame, Sec. Lt. D. L., R.A.F.

Second List.

Killed.—Austin, Sec. Lt. E. V., R.A.F.
Davidson, Lt. J. T. G., R.A.F.
Dell-Clarke, Capt. G. C., L.N. Lan. R. and R.A.F.
Jeffrey, Lt. H. G., R.A.F.
Ford, Sec. Lt. N. S., Queen's (R.W. Surr. R.) and R.A.F.
McLellan, Lt. J. O., R.A.F.
Stennett, Lt. F. W., R.A.F.
Waite, Sec. Lt. L. P., R.A.F.
Died of Wounds.—Benton, Sec. Lt. J. W., R.A.F.
Rayner, Lt. A. S., Northants R., attd. R.A.F.
Wounded.—Anderson, Lt. S., R.A.F.; Beith, Sec. Lt. G. A., R.A.F.; Browne, Lt. W. G. M., R.A.F.; Harris, Sec. Lt. F., R.A.F.; Line, Lt. J. K., R.A.F.; Middleton, Lt. C. W., R.A.F.; Murphy, Lt. C. W., R.A.F.; Mobbs, Sec. Lt. C. G., Northants R., attd. R.A.F.; Neary, Sec. Lt. T. F., R.A.F.; Shaw, Sec. Lt. F., R.A.F.; Sutherland, Sec. Lt. J. A., R.A.F.; Williams, Lt. K. L., R.A.F.
Missing.—Capes, Lt. C. W., R.A.F.
Hendry, Sec. Lt. J. C. S., R.A.F.

Reported August 5th.

Killed.—Breakey, Lt. H. L., R.A.F.
Carver, Lt. R. C., R.A.F.
Foggin, Sec. Lt. G. W. D., R.A.F.
Homewood, Sec. Lt. C., R.A.F.
Pascoe, Lt. C. W., R.A.F.
Died of Wounds.—Pausch, Sec. Lt. A. W., R.A.F.
Died.—Walker, Sec. Lt. H. H., R.A.F.
Wounded.—Burley, Sec. Lt. L. E. T., Durh. L.I., attd. R.A.F.; Cowden, Sec. Lt. W., R.A.F.; Dodds, Sec. Lt. C. W., R.A.F.; Foster, Sec. Lt. F. H., R.A.F.; Gurdon, Lt. J. E., R.A.F.; Hall, Lt. R. T., R.A.F.; Howe, Lt. P. F. C., R.A.F.; Palmer, Sec. Lt. H. H., R.A.F.; Walkerdine, Lt. B. A., R.A.F.; Wheeler, Sec. Lt. D., Oxf. and Bucks L.I. and R.A.F.
Missing.—Burn, Sec. Lt. J. S., R.A.F.; Church, Sec. Lt. F. J., R.A.F.; Barrett, Sec. Lt. B. N., R.A.F.; Gilman, Lt. W., R.A.F.; Gray, Sec. Lt. R. H., R.A.F.; Mallett, Sec. Lt. D., R.A.F.; Simons, Sec. Lt. A. T., R.A.F.
Prisoner.—Morse, Lt. T. W., R.A.F.
Previously reported Missing, now reported Prisoners.—Andrew, Sec. Lt. W. L., R.A.F.; Cross, Sec. Lt. A. S., R.A.F.; Fellowes, Lt.-Col. P. F. M., D.S.O., R.A.F.; Magee, Sec. Lt. E. A., R.A.F.; Peat, Sec. Lt. R. W., R.A.F.; Townsend, Sec. Lt. H. E., R.A.F.
Previously reported Missing, now reported Wounded and Prisoner.—Breckenridge, Sec. Lt. W., R.A.F.
Previously reported Missing, now reported believed Prisoners.—Clarke, Sec. Lt. H. A., R.A.F.
Robson, Lt. C. C., M.C., R.A.F.
Previously reported Missing, now reported believed Wounded and Prisoners.—Drew-Brook, Sec. Lt. T. G., R.A.F.
Milani, Sec. Lt. R. S., R.A.F.

Reported August 6th.

Killed.—Blount, Sec. Lt. J. H. Oxf. and Bucks. L.I. and R.A.F.
Currie, Sec. Lt. W. H., R.A.F.
Cowan, Sec. Lt. A. A., R.A.F.
Jones, Sec Lt. P. G., R.E., attd. R.A.F.
Lewis, Sec. Lt. M. B., R.A.F.
Simms, Capt. A. L., D.S.C., R.A.F.
Whitlock, Lt. C. E., R.A.F.
Died.—Fraser, Sec. Lt. M., R.A.F.
Prance, Sec. Lt. J. E., R.A.F.
Wounded.—Brown, Capt. A. R., R.A.F., Colman, Sec. Lt. C. W. T., C. Gds, attd. R.A.F.; Ford, Sec. Lt. L. S., R.A.F.; Harper, Sec. Lt. W. E., R.A.F.; Moore, Sec. Lt. E. R., R.A.F.; Nordberg, Lt. E., A.S.C. and R.A.F.; Saunders, Sec. Lt. S. J., R.A.F.; Soutar, Sec. Lt. G. R. C., R.A.F.; Spranklin, Sec Lt. W. A., R.A.F.
Missing.—Ashfield, Lt. L. A., R.A.F.; Ankers, Sec. Lt. J., R.A.F.; Bosher, Lt. H., R.A.F.; Dawson, Lt. W., R.A.F.; English, Lt. M. G., R.A.F.; Pegram, Sec. Lt. J. A. H., R.A.F.; Pugh, Lt. J. A., R.A.F.; Strang, Lt. A. R., R.F.A. and R.A.F.; Thrower, Sec. Lt. L. A., R.A.F.; Vowles, Lt. J. A. E., R.A.F.

Casualties among W.Os., N.C.Os., and Men of the R.A.F
The Dates are those of the Official List

Killed.

July 30th.—Croft 90116 2nd A/M F. R. (St. Pancras, London).

Died.

July 28th.—Gardner 126856 2nd A/M A. (Rugby); Hodgson 119419 3rd A/M J. (Longtown, Cumberland); Lodge 28233 1st A/M W. (West Malling, Kent); Prosser 93672 2nd A/M W. F. (Wells, Somerset); Quinton 99609 2nd A/M G. P. (Paddington, London); Smith 214816 1st Pte. J. (Nottingham).

July 30th.—Hughes 121922 2nd A/M E. (Liverpool); McQuade 81857 3rd A/M H. (Barrhead); Sage 41091 2nd A/M A. P. (Reading).

Accidentally Drowned.

July 30th.—Jacob 59471 2nd A/M B. (Bristol).

Died of Wounds.

July 30th.—Perry 7679 Cpl. C. (Gray's Inn Road, London).

Wounded.

July 28th.—Bower 21849 1st A/M F. R. (King's Lynn); Geake 5714 1st A/M G. (Forest Gate, London); Smith 21110 1st A/M G. A. (Bradford).

A.B.C.

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MISSING.

JULY 28th.—Brooks 70405 Serjt. W. E. A. (Cardiff); Lawder 38994 Act. Serjt. W. (Harpurhey); Sheppard 224388 1st Pte. R. (Plumstead, Kent).

PREVIOUSLY REPORTED MISSING, NOW REPORTED BELIEVED MISSING, AND WOUNDED, AND PRISONER OF WAR.

JULY 30th.—Hamilton P/S 40638 Serjt. J. (Chapeltown, Lanarkshire).

MISSING, BELIEVED DEAD.

JULY 30th.—Scott, P/6329 Serjt. E. (East Ham).

PERSONAL NOTICES.

NAVAL.

DEATHS.

BRISLEY.—Maj. C. E. Brisley, R.A.F., late R.N.A.S., was killed whilst flying in England on July 30th.

WIMBUSH.—Lt. Ewart Austin Bourchier Wimbush, D.F.C., R.A.F., was the only son of the late John Bourchier Wimbush, of Rothwell, Yorkshire, and Maud Howland Jackson, of Ringwood. He was educated at Stubbington House, Durlston Court, and in H.M.S. "Worcester." At the age of 17, when the war broke out, he obtained a commission in the R.N.V.R., and after completing the usual course of gunnery in H.M.S. "Excellent," he was appointed to the "Tipperary," but was on sick leave when the "Tipperary" went down in the Battle of Jutland, and he was then appointed to the "Carysfort," in which he served until he volunteered for the R.N.A.S. in 1917. After training he was sent to the Eastern Mediterranean, where he took part in the bombing of the "Goeben." He met his death in a duel over the enemy lines while on a reconnaissance on May 23rd.

MILITARY.

DEATHS.

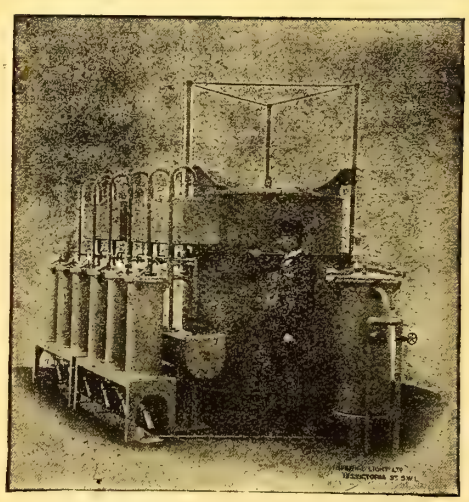
BAINBRIDGE.—Lt. Eric Bainbridge, R.F.C., who was reported missing as long ago as Sept., 1916, is now officially reported dead. He was 18 years of age, and was the youngest son of the late Reginald Newton Bainbridge, of Assam, and Mrs. Emily Bainbridge. He was educated at the Victoria College, Jersey, where he was a member of the O.T.C., and he also belonged to the Essex Volunteer Regt. He obtained a commission in the R.F.C. in April, 1916, and in Sept. of the same year, when on patrol duty abroad with two other machines, encountered a superior enemy squadron. Mr. Bainbridge was seen to attack four of them, but in his turn he was attacked by two others, and was brought down in the enemy lines.

COLERIDGE.—Lt. Colin G. Coleridge, R.A.F., who was killed while instructing in flying in Canada on July 23rd, was 29 years of age, and the second son of Mr. and Mrs. John Coleridge of Snettisham, Norfolk. He had his wings in December last year.

FITZGERALD.—Lt. Roy James FitzGerald, M.C., Gloucester Regt., attd. R.A.F., who was killed while acting as observer at the front on July 1st, was the son of the late William Crowthers FitzGerald, of Wellington, New Zealand. He enlisted in the Gloucester Regt. in September, 1914, and very shortly afterwards received his commission, proceeding to the front with the regiment in 1915. A correspondent writes:—"Lt. FitzGerald was a fine athlete and distinguished himself in trench warfare and in the heavy fighting on the Somme in 1916; he twice led companies in successful assaults, being awarded the M.C. for gallantry and leadership. During an attack in May, 1917, he was wounded and captured by the Germans while insensible, and after five months in hospital and a prisoners' camp in Germany, he, together with another officer, escaped, and after several adventures reached Holland on Oct. 8th. On arrival in England he was sent for by the King, who invested him with the M.C. won in the previous year. Although granted three months' leave, he gave up two months of this in order to rejoin his regiment on another front, where he again distinguished himself by fording a river, and, with one or two companions, bringing back prisoners on several successive occasions. For these services he was recommended for a Bar to his Military Cross. In the spring of this year he joined the R.A.F., and was killed while acting as observer, having, as usual, volunteered for a dangerous task." He was married in 1916, and leaves a widow.

HUNT.—Sec. Lt. George E. Hunt, K.O.Y.L.I., attd. R.A.F., who was accidentally killed in Wiltshire on July 21st, was the only son of the late C. E. Hunt, Esq., of Redcar, and Mrs. T. J. Dickson, "Glenroyd," Marton.

LOWCOCK.—Major R. J. Lowcock, D.S.O., M.C., Notts and Derby Regt., attd. R.A.F., was recently killed whilst flying on the South Coast. Major Lowcock held a commission in the Notts and Derby Regt. in 1915, and was attached as Sec. Lt. to a Reserve Battalion of that regiment. Transferring to the R.F.C. he won the Military Cross in December, 1916, for good work while on artillery reconnaissance. In September, 1917, he was awarded the D.S.O. also for work in connection with artillery observation and for contact patrol work. "On one



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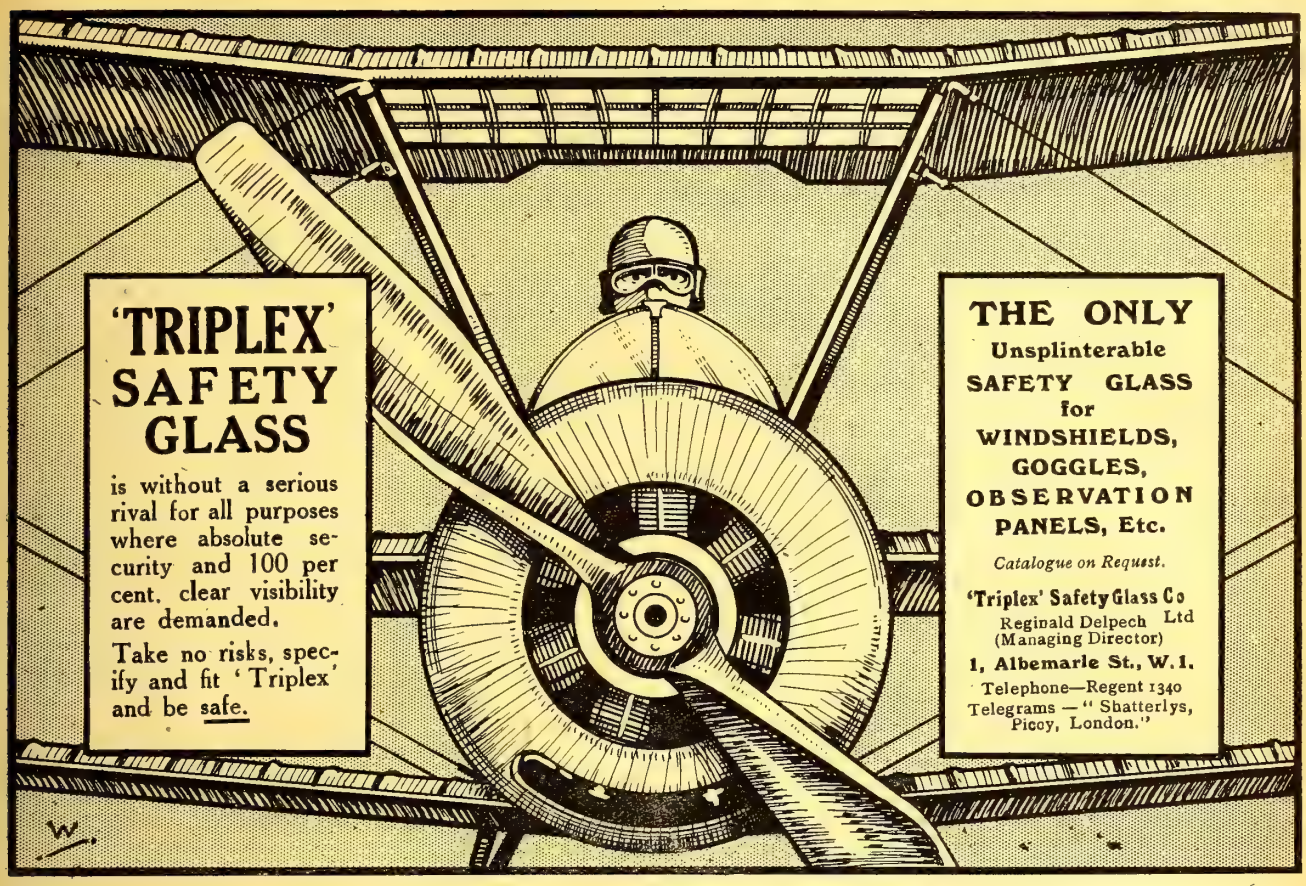
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occasion," says the citation, "although attacked by five hostile machines he carried on with his work until he was wounded in the leg. He then succeeded in landing in safety, having destroyed one of the hostile machines."

ROGERS.—Sec. Lt. Arthur Forbes Rogers, R.A.F., who was killed on July 16th, was the son of Mr. and Mrs. Arthur Raleigh Rogers, of 6, Ulundi Road, Blackheath. He joined the Artists' Rifles when he was 17 years of age, and entered the Flying Corps in February of last year, becoming a qualified pilot in the following August. He was 19½ years of age.

THOMAS.—Capt. Owen Vincent Thomas, R.A.F., who died on July 29th as the result of an accident, was the last son of Brig.-Gen. Sir Owen and Lady Thomas, of Albemarle Mansion, Albemarle Street. He was 24 years of age, and was appointed flight commander in Nov., 1916.

VAUCOUR.—Major Awdry Morris Vaucour, M.C., D.F.C., R.A. and R.A.F., was killed in action in Italy on July 16th. He held a regular commission in the Royal Artillery, which he joined at the outbreak of war. Early in 1915 he was seconded to the Royal Flying Corps, and in September of that year was awarded the Military Cross for a very dangerous reconnaissance which he successfully carried out at Loos under very heavy fire.

He won the Bar to the Military Cross in 1916 on the Somme by the following fine service: "He attacked ten hostile machines and completely scattered their formation. Previously, while returning with a perforated petrol tank, he shot down an enemy machine. Later, he shot down a hostile machine, being engaged with eight altogether. On another occasion he and his observer shot down two hostile machines."

Subsequently, when commanding his squadron in Italy, he was awarded the Distinguished Flying Cross and the Italian Silver Medal for Valour. He was several times mentioned in dispatches.

An officer who had served under him in the squadron since August, 1917, writes: "Our hearts are heavy with the sense of an irreparable loss. We admired him as a commander; we loved him as a friend. Careless of danger, always cheerful and helpful, his very presence in the squadron brought inspiration and encouragement to the performance of the day's work. We can scarcely realise that he is gone from us. I have been with this squadron since August, 1917, and I speak for past and present members of the squadron when I say we were proud to serve under your son. His gallant leadership and his never-failing cheerfulness, often under trying circumstances, endeared him to all who were privileged to know him."

Major Vaucour was the only son of the late the Rev. H. M. Vaucour and Mrs. Vaucour, of Sandtoft, Upper Norwood, and was 28 years of age.

BIRTHS.

BECK.—On July 24th, at Nether Wallop, near Stockbridge, Hants, the wife of Geoffrey R. Beck, London Regt., attd. R.A.F., of a daughter.

DARWIN.—On July 30th, 1918, at Dryburn, Durham, the wife of Capt. C. J. W. Darwin, Coldstream Guards (temp. Maj., R.A.F), of a son.

AIR FORCE.

ENGAGEMENTS.

BARNINGHAM—OSBORN.—A marriage will shortly take place between Lt. Harold Barningham, R.A.F., youngest son of the late William Barningham and Mrs. Barningham, Calcot Rise Reading, and Phyllis, eldest daughter of Maj. and Mrs. Arthur Osborn, 11, Selwood Place, S.W.

WEBB—MILLS.—A marriage has been arranged, and will shortly take place, between Lt. D. J. G. Webb, R.A.F., youngest son of Mr. C. C. C. Webb, D.L., and Mrs. Webb, of Kilmore, Nenagh, and Knocktoran, Knocklong, and Cornelia Mary, eldest daughter of the late A. H. Mills and Mrs. Mills, of Curraghbawn, Nenagh, Co. Tipperary

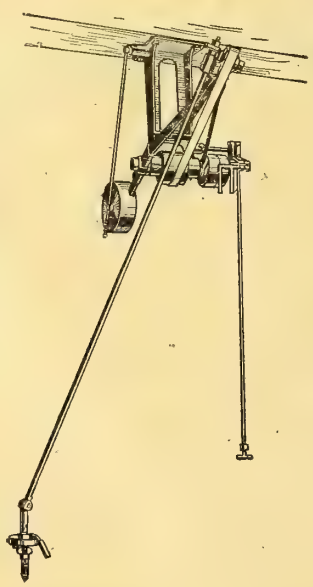
MARRIAGES.

BREESE—LOCKE.—On July 31st, at St. Mark's, Surbiton, Capt. Maurice Charles Breese, R.A.F., elder son of Mr. and Mrs. Charles Breese, of Streatham, was married to Clare May Locke, youngest daughter of the late Edward Locke and Mrs. E. W. Crickmay, of The Nook, Catherine Road, Surbiton, by Canon J. Hasloch Potter.

RENWICK—BAYLY.—On Wednesday, July 31st, at Holy Trinity Church, Sloane Street, Lt. William Somerville, R.A.F., son of W. Renwick, of Langgarth, Stirling, was married to Joan Lesly, daughter of the late Langton G. Bayly and Mrs. Bayly, of 5, Droitwich Road, Worcester, by the Rev. Percy Mark Herbert, Rural Dean of Camberwell.

LE FLEMING SHEPHERD—GUY.—On July 31st, at St. Mary's Church, Finchley, Lt. John Norman King le Fleming Shepherd, R.A.F., youngest son of Dr. and Mrs. Richard le Fleming Shepherd, of Saltford, Bath, grandson of Sir Richard le Fleming, Bart., of Rydal, was married to Joyce Guy, youngest daughter of Mr. and Mrs. Richard J. Guy, Gherbari, Dollis Park, Finchley, N. (late of Calcutta), by the Rev. W. St. Hill Bourne, Rector.

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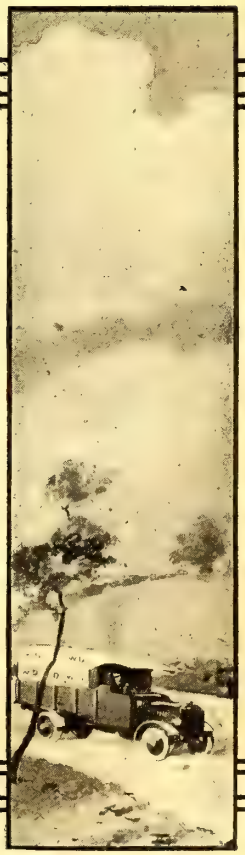


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WHITLEY—EKINS.—On July 23rd, at St. Paul's Church, New Beckenham, Maj. H. M. Whitley, R.A.F., younger son of Mr. and Mrs. George Whitley, of Chingford, was married to Adelaide Cecilia, only daughter of Mr. and Mrs. A. G. Ekins, of Woodford, by the Rev. Canon Sampson.

BIRTHS.

CHILDS.—On July 30th, at Aylsham Cottage, Biggin Hill, Kent, the wife of Maj. H. B. T. Childs, R.A.F., of a son.

COATES.—On July 29th, to Carol, the wife of Lt. Donald Coates, R.A.F., a daughter.

COOPER.—On Aug. 1st, at Oriel, West Byfleet, to Gladys, wife of Maj. J. P. C. Cooper, R.A.F., of a son

SMITH.—On July 31st, at 7, St. Albans Mansions, Kensington, W.8, the wife of the Hon. Constantine Smith, R.A.F., of a daughter.

FOREIGN COMMUNIQUES.

FRANCE.

JULY 30th.—On July 28th and 29th air fighting continued on the battle front between the Aisne and the Marne.

On July 28th French and British bombers dropped over 20 tons of projectiles on cantonments and troops on the march in the valleys of the Ardre and the Vesle, the railway stations at Fismes, Compiègne, Mareuil, and Bazoches; and the aviation ground at Mont Notre Dame.

During the day of July 29th and during the following night they dropped 36 tons on objectives in the same region. Fires and explosions were observed at Fismes, Alincourt, and Bazoches.

On July 29th our chasing squadrons engaged in numerous combats, in the course of which 14 German machines were shot down or driven down out of control.

JULY 31st.—During the day of July 30th French and British crews shot down and drove down out of control 18 enemy aeroplanes and set fire to one captive balloon.

AUG. 1st.—ARMY OF THE ORIENT.—French aviators dropped a ton of explosives on the camps of the Devoli Valley, and British aviators bombarded Petric Railway Station.

AUG. 2nd.—During the day of July 31st seven German aeroplanes were brought down by our crews.

On the same day 22 tons of explosives were dropped on the aviation grounds between the Aisne and the Vesle and on the enemy's cantonments and bivouacs in the Valleys of the Ardre and the Vesle.

AUGUST 5th.—ARMY OF THE ORIENT.—French air squadrons dropped one ton of explosives on the enemy camps in the region of Pogradec (Lake Ochrida), and British aviators bombarded the enemy depôts in the Struma Valley.

GERMANY.

JULY 30th.—Lt. Loewenhardt obtained his 46th aerial victory.

JULY 31st.—Yesterday we shot down 19 aeroplanes in aerial combats. Lieut. Loewenhardt obtained his 47th and 48th aerial victories, and Lieut. Bolle his 27th.

AUG 1st.—The enemy lost on the front yesterday 25 aeroplanes in aerial combats and by gunfire from the ground.

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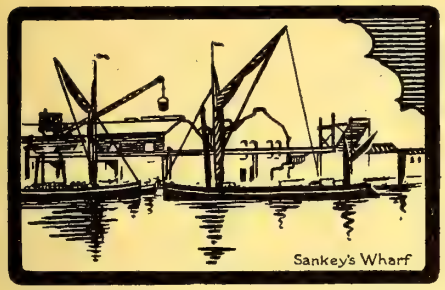
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Further, a British squadron of six big battleplanes, on its way to make a raid on Saarbrücken, was destroyed by six of our front and home-chasing forces before it was able to drop its bombs. We shot down another British big battleplane out of a second squadron which followed.

Aug. 2nd.—Yesterday we shot down 14 enemy aeroplanes and four captive balloons. Capt. Berthold obtained his 40th aerial victory. Our bombing machines were very active during the night, and destroyed among other things a big French munition depot north of Châlons.

Aug. 3rd.—Lt. Udet obtained his 41st, 42nd, and 43rd aerial victories, Lt. von. Richthofen his 31st and 32nd, and Serjt. Thom his 26th.

August 5th.—Serjt. Thom obtained his 27th aerial victory.

AUSTRIA.

July 31st.—There has been very lively aerial activity on the whole of the Venetian front.

Aug. 3rd.—On July 31st in the south-west (Italian front), one of our most successful chasing aviators, First Lt. Frank Linke Crawford, met a hero's death in aerial combat.

ITALY.

July 30th.—Aerial activity was intense on both sides. Aviation camps and other military objectives were effectively bombarded in the enemy's lines of communication. Twelve hostile aeroplanes were brought down in air fighting; a 13th machine hit by artillery came down near Asolo.

July 30th.—During the early hours of the morning our Naval Air Service bombarded the military and harbour works of Pola. The attack, which was carried out in force, lasted about two hours. Several fires were observed, especially in the localities where the submarine and aviation stations are situated. Machines sent to reconnoitre after the attack observed dense columns of smoke, a sure proof of the serious nature of these fires. All our machines returned uninjured.

July 31st.—Yesterday the aviators repeated their effective bombing of enemy military objectives. In air fighting five hostile machines were brought down.

Aug. 1st.—British aviators and Italian naval aviators are continuing their intensive attacks on the Austrian rear lines on the Albanian front. On July 26th a British squadron bombarded Ragorina, causing a fire to break out in storehouses on the El Basan railway. On July 28th and July 30th our seaplanes bombarded enemy installations and trenches in the neighbourhood of the Ardenica Monastery. All our aviators returned safely to their bases.

U. S. A.

Aug. 2nd.—Last night our aviators successfully bombed the railroad station and yards at Conflans. Numerous hits were made, causing several fires and one large explosion. All of our machines returned.

August 4th.—On August 3rd our aviators shot down four hostile aeroplanes.

TURKEY.

Aug. 1st.—A British seaplane fell into our hands on July 29th, and its occupants, two British officers, were taken prisoners

BELGIUM.

Aug. 4th.—Sous-Lt. Coppens yesterday brought down near Zonnebeke, a German captive balloon in flames, thus achieving his 22nd victory.

BULGARIA.

July 28th.—In the region of Monastir, after a fight in the air, an enemy aeroplane was brought down in flames behind our lines.

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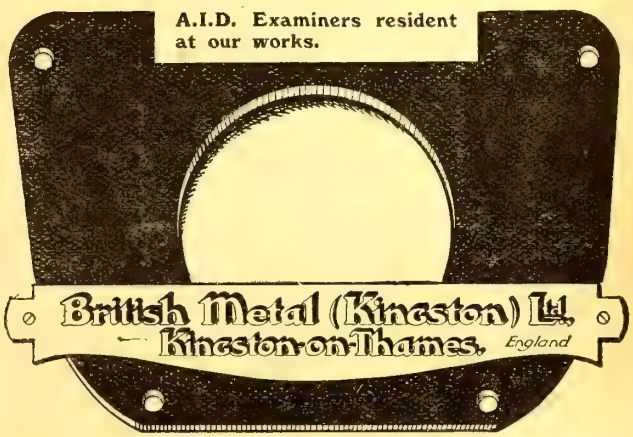
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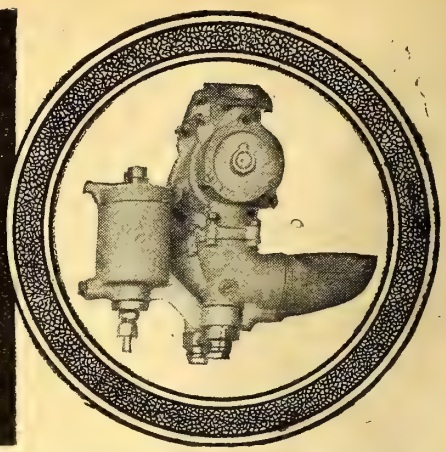
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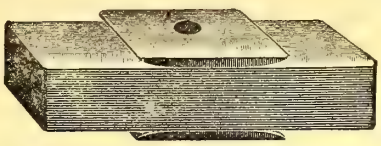
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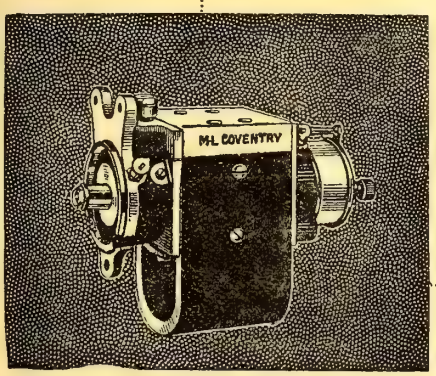
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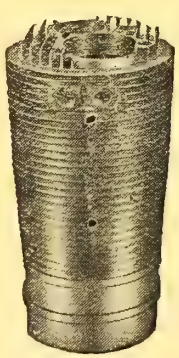
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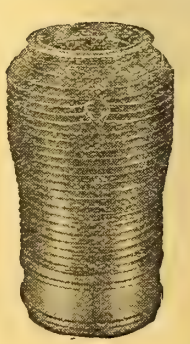


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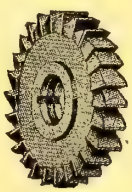
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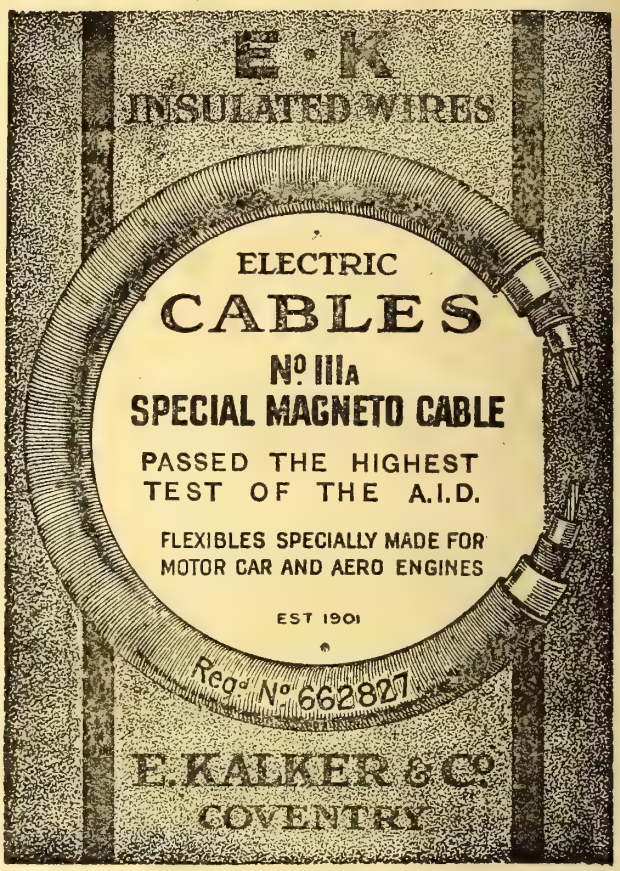
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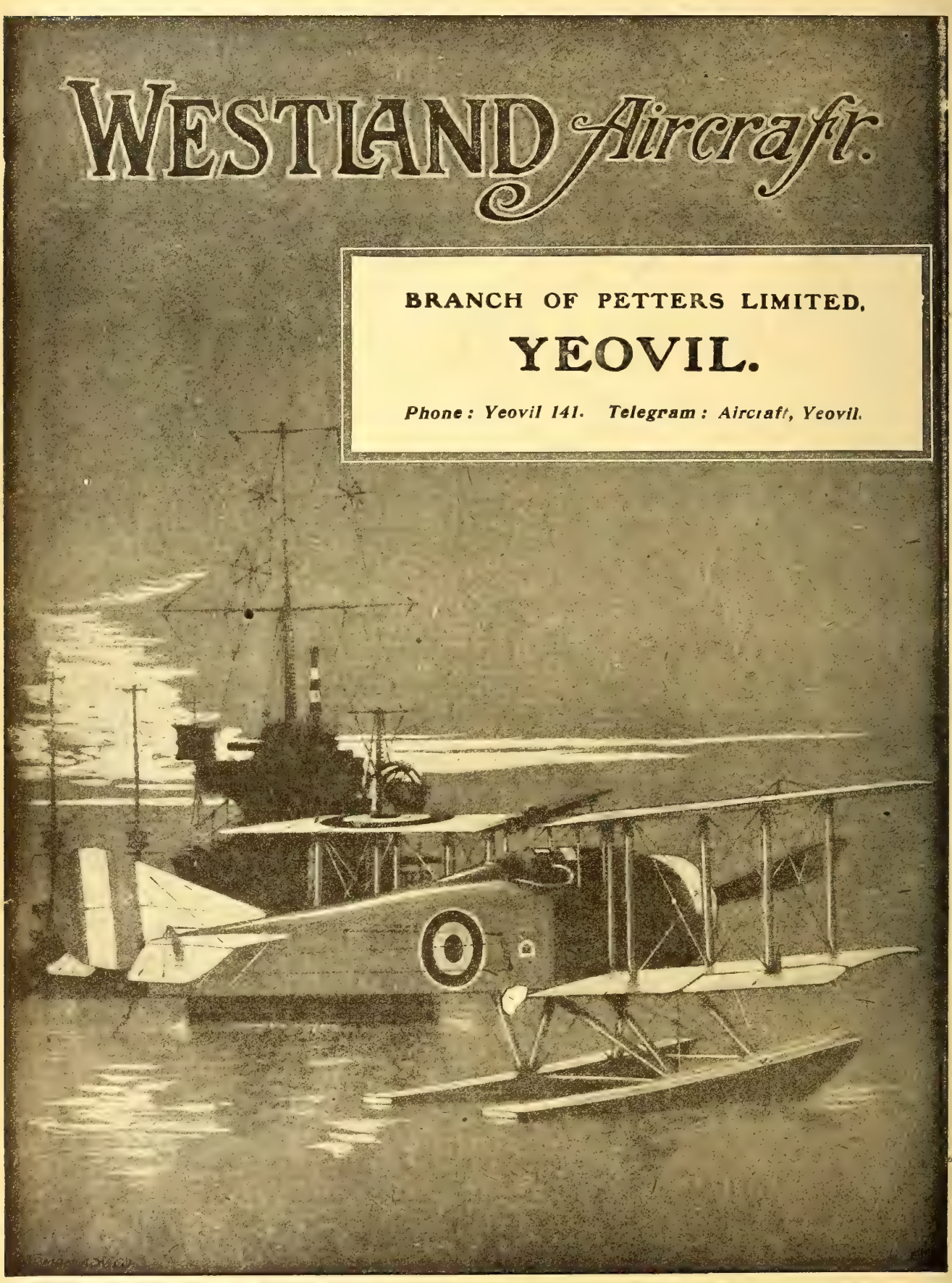
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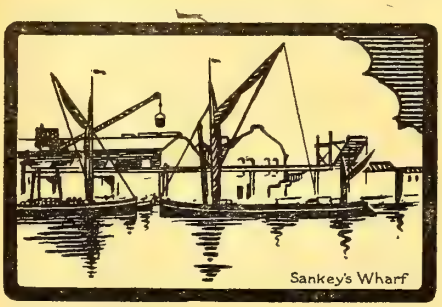
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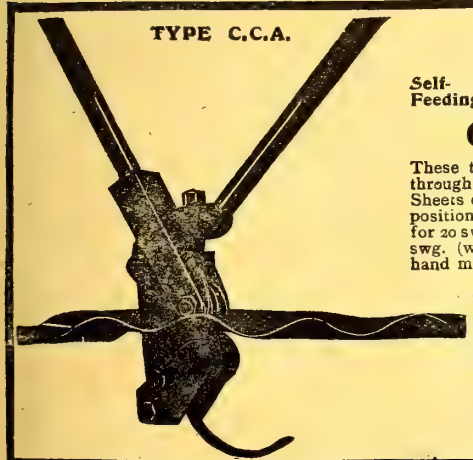
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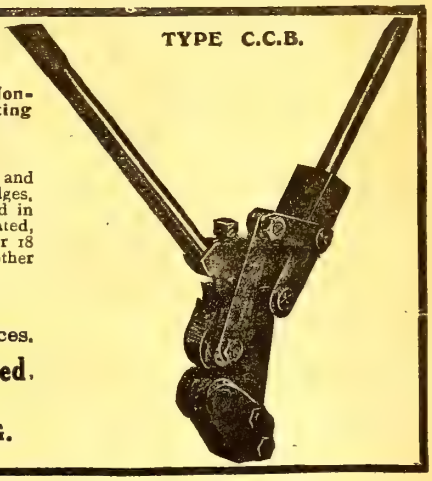
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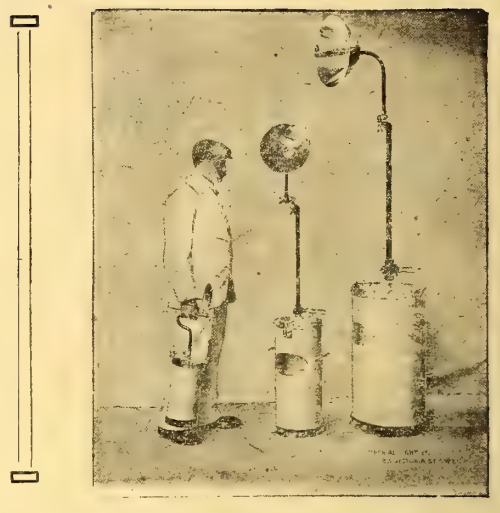
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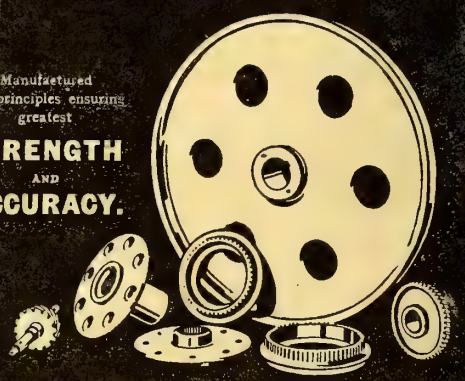


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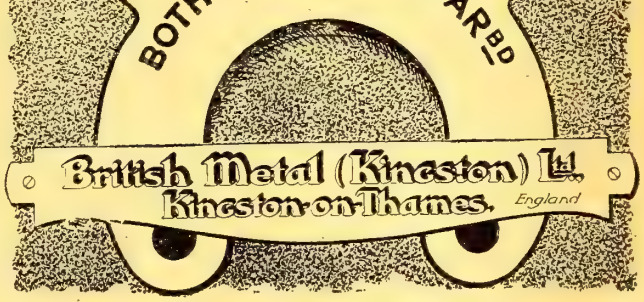
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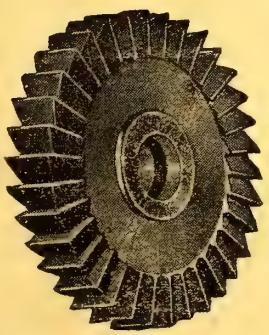


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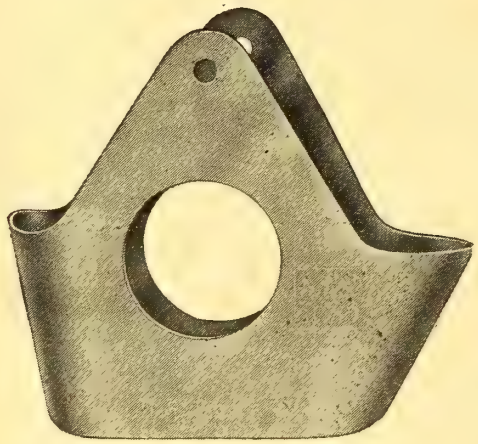
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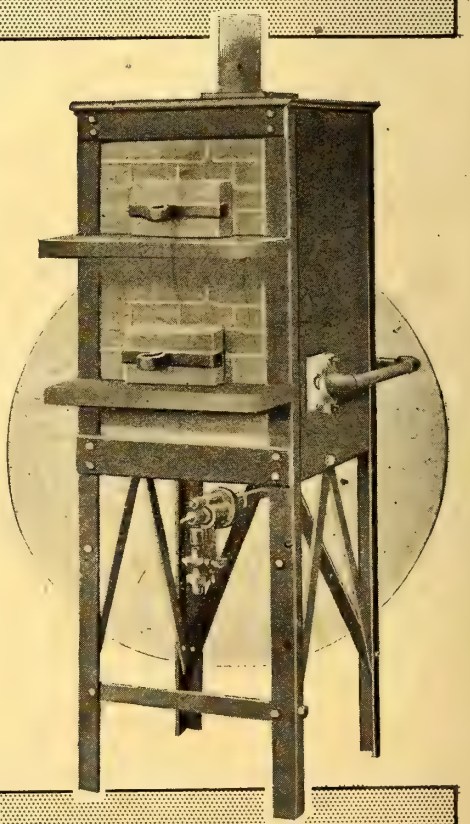
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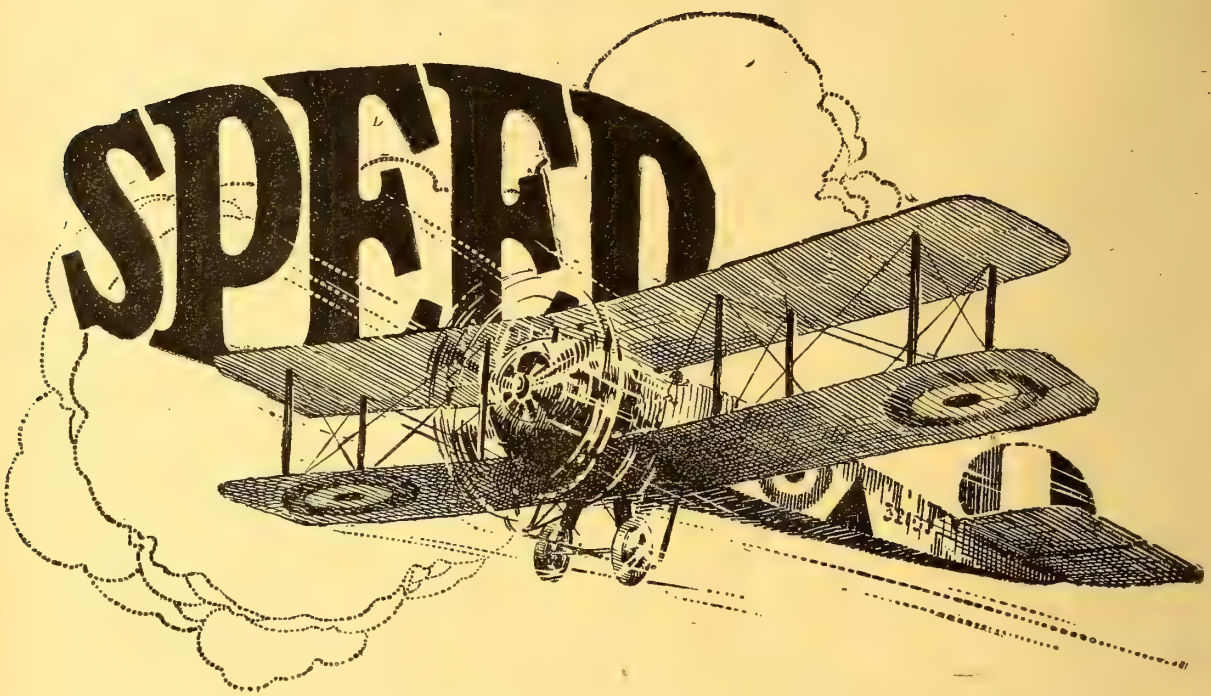
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ON R.A.F. FASHIONS.

Despite Major Baird's expressed, or pretended, ignorance of the hatred with which the new art-shade R.A.F. uniform is regarded in the Air Force, it seems that someone or other at the Hotel Bolo has either more sense or more sympathy with the feelings of both officers and men, for it appears that for the present at any rate the loathsome blue thing is not to be made compulsory. The young officer who put off buying his blue kit on the grounds that he was "waiting to see what the Autumn fashions are going to be" was wise in his generation. One has always admired his judgment in Service matters, but never more than to-day.

Evidently the great official who sent out the latest order is a humorist of high penetration, for he remarks incidentally and apropos nothing in particular except the light blue uniform: "The description in par. 5, Air Ministry Weekly Order No. ***, still holds good." Unfortunately he omits to include the whole description, and naturally omits all the unofficial descriptions, most of which would be unpublishable in any event—except on asbestos sheet—but one thanks him for the implied surprise that a description published a few weeks before should *still* hold good.

Fashions change so rapidly in these days, don't they? It really takes a man all his time to keep pace with what is done and what isn't done. Now that revue stars are called in to assist elderly gentlemen in designing freak uniforms it becomes more difficult still.

Still there is a mathematical limit to the permutations and combinations which can be produced with a limited supply of cloths and colours, so in time the people who are helping to win the war by running officers into endless expense for new kit must in time come to the end of the said combinations (mathematical not sub-sartorial). Then we may be able to start in the "as you were" position, with a decent khaki service kit, with ordinary understandable rank badges, so that people look like officers in His Majesty's Service and not like a Blue Hungarian Band, or a kinema janitor.

Two True Stories.

Even the R.A.F. khaki kit is bad enough. Apropos which, here is the true version of the general's adventure which has been related in print and in error elsewhere. He had been lunching at a riverside hotel, and, as smoking was not allowed in the dining-room, he asked the waiter where he could smoke. The waiter told him he could smoke in the hall. Some minutes later the waiter went up to him and apologised, saying that if he had seen his hat (which was full of brass, of course), and had known that he was an officer, he would have directed him to the smoking-room, but he thought by the crown on his sleeve that he was some sort of serjeant-major.

Another sad adventure befell an R.N.A.S. officer dressed in R.A.F. khaki. He went into a railway refreshment-room, presumably to get a cup of tea—the R.N.A.S. never drinks anything stronger— and while he was drinking it a Blue Marine lounged up to him, tapped him on the shoulder, and said: "Gi' us a light, mate." The officer turned on him sharply, told him to pull himself together, click his heels, and salute, and have a good look so that he would know one of his own officers next time he saw one. The poor marine jumped to attention with the smartness proper to His Majesty's Jolly, and standing as rigid as a rock, but with truly contrite face and voice explained that he only saw the officer's back and thought he was a cadet because he was not wearing a Sam Browne.

Such are the trials imposed on the wearers of the R.A.F. fancy dress, thanks to the Authorities permitting incompetent people with the waffley mind common to the artistic temperament to meddle with Service kit.

What One May Do.

However, the R.A.F. khaki suit is not quite so bad as that blue abomination, so it is consoling to know that "all officers may for the present wear R.A.F. khaki uniform." Newly commissioned officers may buy khaki instead of blue, officers who have placed orders for khaki need not cancel such orders, and officers whose uniforms require urgent renewal may purchase khaki and will be allowed to wear out such uniform. Also officers serving in the Near and other East will wear khaki drill during the hot weather, and will wear home-pattern uniform when officers of the Navy and Army at their stations take to winter clothing.

Of course, this climb-down has to be effected as gracefully as possible, so the reason given for it is the high prices which are at present being charged for the blue abomination. It is said that arrangements are being made for the control of the blue cloth, and that by the time officers have worn out the khaki uniforms now bought the blue abominations will be purchasable at reasonable prices. Further, it is said that as all possible steps are being taken to control the blue cloth, officers are not intended to provide themselves with new khaki uniforms beyond the one suit.

Most people—except those of the "gilded popinjay" type—will pray fervently that the arrangements for the control of blue cloth will fail entirely. Anyhow, one expects that there will be something of a rush to buy new khaki kit, so as to postpone the evil day of the blue abomination as long as possible.

An Amusing Experiment.

Meantime, if any wealthy officer wants to perform a service to the whole R.A.F., one can recommend an interesting experiment to him. Let him get his tailor to buy enough of the blue cloth to make a complete suit. Then let him take that length of stuff out into the country, preferably by the seaside, and hang it up

in the open, away from any shade, and leave it there exposed to clear sun and sea air and clean rain for about a fortnight or three weeks, so that it may be thoroughly bleached to the same colour all over. After that let him take it back to his tailor and have a uniform and cap made of it.

Then, if he dares, let him go and present himself in it to the Big Bugs at the Bolo. He will probably cure them of any desire to inflict the blue abomination on anybody. And, anyhow, his bleached green uniform will have the virtue of being all one colour and not a varied assortment of shades like the mandril at the Zoo. So long as he keeps well away from nasty messy aeroplanes, and sticks to work at the Bolo—carefully avoiding ink-stains also—probably he will not look half bad. He may be mistaken for a Montenegrin hussar or a Siamese sanitary officer, or something really interesting of that sort, but certainly none will ever suspect him of being a British officer.

Meantime, *tempora mutantur et nos in illis,* but the R.A.F. fashions will probably keep on changing faster still. Therefore, one's advice to young officers is, stick to the old khaki, it will probably become fashionable again if one keeps it long enough, like an out-of-date top-hat. One has considered seriously the question of engaging a sartorial expert for the staff of The Aeroplane to take charge of a weekly column—or page—of R.A.F. Fashion Notes, but paper is scarce, so one will endeavour to convey future changes in the fashions by short, but sufficiently pithy, paragraphs on the subject as occasion arises.

The Ratings Troubles.

It is not only the officers who are worried over their clothes. Here is a pathetic letter from an R.N.A.S. rating to a friend, demonstrating that logic is not logic when applied officially. The R.N. air mechanic says:

"I am one of the old boys in blue and I was very much insulted by a Q.M. of the R.F.C. My two chums and I went to the clothing stores to change our overalls, and when this was done I was ordered to give in my Naval hat. I at once refused, and was told to consider myself under open arrest unless I obeyed this order.

"Having nothing else to do I obeyed, and to make things worse for me they gave me a Flying Corps hat with R.F.C. badge.

"I told the Quarter Master that if my R.N.A.S. hat was not uniform the R.F.C. could not be. He had me put outside, and I have noticed since that I seem to get all the dirty jobs.

"To prevent my chums from having their hats taken I lent them the R.F.C. hat to get their clothes changed.

"We are told not to grumble, but instead of helping us over our differences they make things worse. Sir, do you think this is the way to make a success of the R.A.F.?"

Candidly I don't. If R.N.A.S. uniform is not R.A.F. uniform, then logically R.F.C. uniform is not R.A.F. uniform either. If and when a proper R.A.F. uniform is issued for "airmen"—as ratings and men are now called officially—then it is logical and fair, even if unwise, to put both R.N.A.S. and R.F.C. airmen into it. The wise thing to do would be to retain something like a naval uniform for the R.N.A.F. and something like a military uniform for the Military branch and the Independent Air Force, but it is exceedingly unwise to stir up discontent by putting men of either branch into the uniforms of their "opposite numbers."

Really the root of all this trouble is the still more unwise system recently instituted of taking experienced R.N.A.S. ratings away from seaplane stations, or other R.N. Air Stations, where they are used to their special work, and putting them into R.F.C. stations, and contrariwise sending R.F.C. men to naval stations. All this tends to take specialists off their proper jobs and make them inefficient.

Other Silly Fashions.

Apart from uniforms, for which the High Authorities at the Bolo are to blame, the R.A.F., and more particularly the R.F.C. section of it, have developed sundry bad fashions of its own—as, for instance, cocktails before lunch and entirely unnecessary glasses of port afterwards. The worst of all these habits is that of chasing up and down the beach at seaside resorts, acting the silly goat generally, and making a beastly row which annoys people who go to the seaside for a rest. Personally one hates the seaside and loathes beaches and promenades and holiday crowds, so one writes without any personal prejudice in this matter.

To the credit of the R.N.A.S. be it said that at all R.N. Air Stations within one's personal knowledge this idiotic fashion was sternly suppressed. It is therefore the more satisfactory to learn that at least one G.O.C. R.A.F. has put his foot down heavily on those who make themselves a nuisance in this way. Making full allowance for the exuberance of youth, there is no more excuse for the fashion than there would be if gunner officers were to start the fashion of galloping batteries along promenades or main streets just to show how jolly clever they thought themselves.

A Lamentable Example.

Only the other day a very brave, but obviously very foolish, young officer, who had distinguished himself highly on active service, was killed through hitting a tree while tearing up and down Christchurch Road, Bournemouth. It is said that he was flying close to the ground, below the level of the lamp-posts. It may have been very amusing to him, and it may have shown off his cleverness as a pilot, though the fact of his hitting the tree and killing himself shows that he was not as clever as he thought. But it certainly scared a lot of people unnecessarily and annoyed a lot more. And in any case it was bad form.

Unfortunately good form is not part of the curriculum of young officers in these days, though one hopes it will be so in future, now that several real soldiers hold important commands in the R.A.F. Therefore, while one laments the fact that the King has lost a valuable fighting man, one cannot work up any serious sorrow over this young officer's fate. It is even conceivable that his life may not have been wasted, as the affair seems to have brought matters to a head, in that it has produced an indignant letter from the local coroner to the Town Clerk, asking him to request the Air Force Authorities not to allow aeroplanes to be flown over the town and pier at low elevations, as being an unnecessary possible source of danger to the public.

Ungentlemanly Conduct.

All who have the welfare of the R.A.F. at heart will agree with the official R.A.F. dictum as to the necessity for avoiding an unnecessary display of bad manners by flying over inhabited areas. One fears that it is quite true that young officers do not realise what is expected from a gentleman pilot, or the harm done to the R.A.F. by their bad behaviour outside their stations, and so it certainly is "up to" all Commanding Officers to draw attention repeatedly to such breaches of gentlemanly conduct.

Low flying is an essential part of the training of active service pilots, but, as correctly stated in the official view, it is quite distinct from this type of behaviour. Nothing can excuse any instructor who permits such conduct, and it is equally reprehensible in officers who are not under instruction.

Squadron Commanders are, naturally, responsible for the use of the machines under their command and should forbid all "joy-riding." Economy in petrol is just as necessary in aviation as in A.S.C. mechanical transport, and there is no reason why aeroplanes should be used for pure joy-riding any more than Service cars..

Can one imagine a bunch of A.S.C. N.C.Os. rigging up a Service lorry as a char-á-banc for a trip to the seaside?

Certainly Service cars are occasionally used for private trips, but the users suffer heavily when caught. There is no reason why aviators should be more privileged than soldiers of any other kind. It is true that they have been so in the past, and apparently German aviators were equally privileged, judging by Rittmeister Freiherr von Richthofen's descriptions of his joy-rides while training as a pilot, but now that aviators are beginning to find their proper level in the scheme of things military it is quite time that they were forced to conform to ordinary military customs, not to say ordinary gentlemanly conduct.—C. G. G.

THOSE CHEVRONS.

There is yet another aspect of the great chevron question which deserves the attention of the authorities. Apparently that prolific purveyor of inaccuracies, Major Baird, M.P., has somehow contrived to convey to the rank and file of the R.A.F. the idea that chevrons are barred because the men of the R.A.F. on active service have such an easy time of it at their aerodromes that they do not deserve chevrons. Naturally the men, especially the old R.F.C. crowd, are highly indignant.

They want to know whether this Major Baird knows anything about the "wireless" section of the R.A.F., nearly all of whom spend their whole time close up to the firing line, co-operating with batteries under heavy shell fire. Also whether this Major Baird knows anything about life on an advanced landing ground. Or about work at a forward aerodrome where one works like a nigger all day and is bombed all night. Or about N.C.Os. and men who are pilots, and observers, and machine-gunners, and wireless operators on aeroplanes. Or about kite balloon sections in the battle zone whose winches are shelled all day long.

Do they not deserve service chevrons just as much as infantrymen who do a certain spell of service in the firing line and then come out into rest billets for as long a period or longer? These R.F.C. people are at it the whole time, barring leave.

Also does Major Baird know that there are thousands of men in the R.A.F. who have been transferred from infantry units, many of whom have been "over the top" on numerous occasions, and some of whom wear three or four wound stripes. Why should these men be deprived of their three or four chevrons?

One knows of R.A.F. air mechanics who have been wounded and gassed and shell-shocked, and who have anywhere between two and four years' service with the B.E.F. to their credit. They also, according to Major Baird, are to be deprived of their chevrons. When home on leave they will be regarded by their friends as embusqués, though they have seen far more actual service than the staff-serjeants and instructors of the Army, who, because they have spent the war training troops at a French seaside resort, are entitled to wear all available chevrons.

The whole thing is a rank injustice to the N.C.Os. and men of the R.A.F. as well as to the officers. If the personnel of the Navy and Army are to be allowed to wear chevrons, then most assuredly the R.A.F. should have the same rights. One does not know, and one cares less, how many chevrons Major Baird is entitled to wear—if indeed he has seen any actual fighting—but the fact that he and the other inhabitants of the Hotel Cecil do not, or cannot, wear chevrons is no adequate reason for depriving the men who have really been in the war of their just dues. One therefore commends the whole question to the reconsideration of the Air Ministry.—C. G. G.

ANOTHER BAIRD BLUNDER.

Colonel Yate having asked the Under Secretary of State to the Air Ministry whether a lieutenant in the Royal Air Force will have to pay at least £16 for one cap and one suit of the proposed new pale blue uniform, and whether the introduction of this pale blue uniform is strongly opposed by all Royal Air Force officers in France and elsewhere because it is so very easily stained by oil, Major Baird, in a written reply, says:—

"Controlled prices will, it is anticipated, be fixed almost immediately, under which the new uniform will be purchasable at a price less by 25 per cent. than the figure quoted by the hon. and gallant member. No foundation is known for the statement in the second part of the question."

[If Major Baird is so utterly out of touch with R.A.F. feeling as the answer to the second part of the question indicates, it is time he ceased to misrepresent the R.A.F. in the House.—Ed.]

THE USE OF THE PARACHUTE.

The following letter from that experienced aviator and parachutist, Lt.-Col. Sir Bryan Leighton, Bart, deserves attention:—

Sir,—Will you allow me space in your paper to endorse Mr. Calthrop's letter, regarding his parachute? I can speak from experience of its excellence.

Even as far back as 1913, when M. Pégoud made the first descent with a parachute from an aeroplane, I always argued—that not only could it be adopted to save the pilot's life, should the machine catch fire, or break when sufficiently high, but—an equally important factor—it would enable the pilot to use a single-seater scout machine as a "projectile."

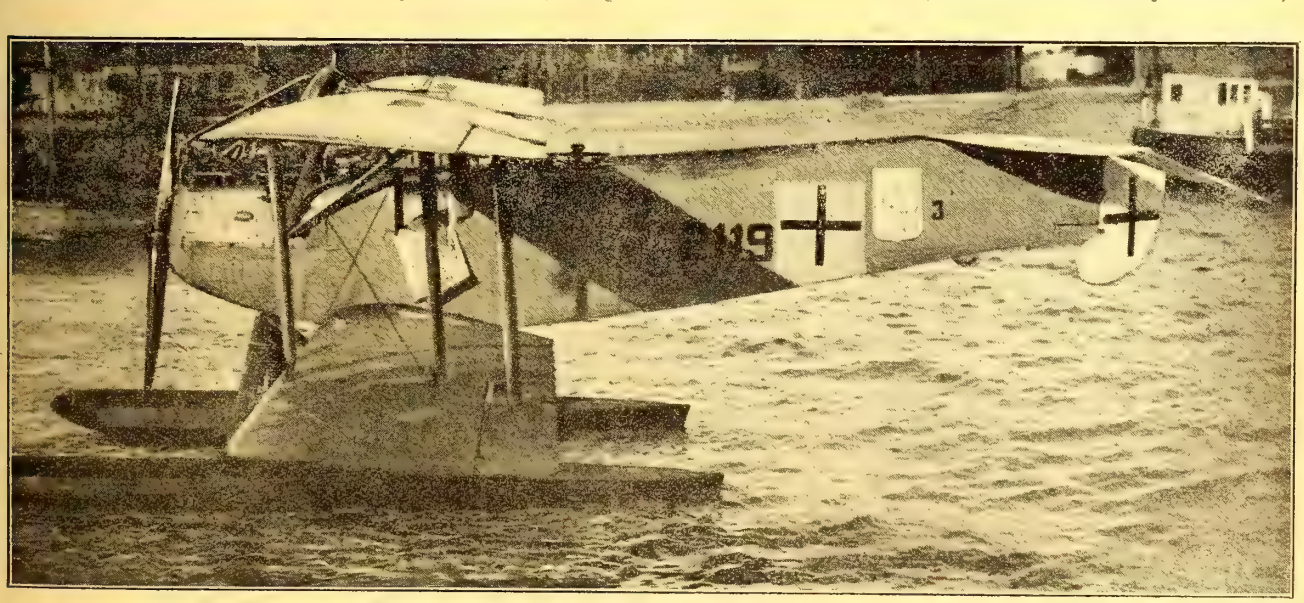
By this I mean that a parachute attachment can be so placed in the fuselage that, should his gun become jammed or his ammunition be expended, the pilot could, if necessity arose, actually ram an adversary's machine of any size and be himself drawn out of his seat automatically by the parachute at the moment of impact.

I suggested ramming Zeppelins before the incendiary bullet came out, and volunteered to do so, but was laughed at. I am convinced that not only would this method of attack become very effective against aeroplanes, but, given equal intelligence, it would take a shorter time to train pilots to "ramming tactics" than to train a first-class machine-gunner.

Unfortunately, my advanced views on these and other matters, which have since come true, were not looked on with favour by the then Authorities, and I understand that I came under the head of criticising superior Military Authority and attempting to communicate with the Press while at the front, and I was eventually placed on the unemployed list, by the Authorities who were then at the head of affairs.

I have since asked leave to resign my commission in order to join the American Flying Corps; but the same Authorities refused permission to do this.

(Signed) Bryan Leighton.
(Late Lt.-Col. Yeomanry and R.F.C.)



A NEW TYPE HUN SEAPLANE. A German seaplane built by the Hannover Wagon Works. The machine recently interned itself in a German harbour. The curious raised fuselage with a turtle back, and the Howard Wright type floats, are noteworthy, as is the shape of the rudder. The latest type "German Cross" marking should be noticed, alongside the White Horse of Hannover.

AN ENEMY TRIBUTE.

A Reuter's message from Zurich, dated Aug. 11th, states :—

The daring flight of Italian aviators over Vienna caused the greatest consternation in the Austrian capital, the population of which had deemed themselves absolutely secure against any kind of hostile attack. The military organ, "Reichspost," writes : "The Italians, who travelled a long journey and crossed the Alps through varying winds and weather, must have been prepared to encounter all kinds of obstacles and perils. That they were undeterred by such terrors, but succeeded in reaching Vienna in broad daylight, is a fact which, though accomplished by the enemy, it would be unchivalrous to belittle.

"This attack places Vienna on the long list of cities visited by the far-reaching weapons of war. It will not only be a memorable experience in Vienna's history of the war, but it will also be an earnest reminder that residents in the Austrian capital have no claim to occupy a privileged position in these terrible times."

The authorities have taken rigorous measures to circumvent the effects of the propaganda literature which was dropped from the aeroplanes, and have issued peremptory orders to the public to hand over every copy found, threatening persons attempting to circulate such papers with the severest penalties.

The "Fremdenblatt" states that there was a wild chase in the streets after the tricoloured sheets, which were speedily sold for twenty crowns apiece, and even more

W.R.A.F. CHANGES.

In answer to a question by Mr. Tyson Wilson, regarding the previous experience of the present commandant of the Women's Royal Air Force, and the reasons for her appointment, Major Baird, in a written reply, says :—Miss Douglas Pennant has for more than six years been a member of the National Health Insurance Commission for Wales and she had previously served as a co-opted member of the London Education Committee. She was appointed to her present position because her experience and qualifications rendered her, in the view of the Air Council, the most suitable person available to carry out the duties.

In answer to a further question by Mr. Tyson Wilson regarding alleged dissatisfaction in the force and suggesting a full inquiry into the causes, Major Baird says :—Two senior officers of the Women's Royal Air Force have resigned since the appointment of the present commandant. The Air Council have every confidence in this lady's ability and discretion, and they see no need for an inquiry of the nature suggested.

THE AIRCRAFT STRIKE.

Since the settlement of the recent aircraft strike in the London district there have been discussions between the parties with a view to a friendly arrangement which should remove all feeling of bitterness and lead to the harmonious working of the factory. As a result both sides submitted the following suggested terms to the Minister of Munitions :—

It is agreed that the terms of settlement *re* the dispute between the Alliance Company and their workpeople shall be as follows :

1. Rock to be re-engaged.

2. The management to continue to recognise the shop stewards as hitherto, provided the shop stewards are elected by the workpeople in the shops and on the understanding that the works' rules are conformed to.

3. For the purposes of negotiation the management to recognise a small committee not exceeding seven in number, consisting exclusively of shop stewards and elected by the shop stewards.

4. The ordinary procedure for a workman bringing any question before his foreman shall be allowed. In the event of the workpeople desiring to put any case before the management it shall be done in the first instance with the foreman or manager of that department, and if no settlement is reached it shall be discussed between the standing committee of shop stewards mentioned above and the management. If these discussions do not result in a settlement the whole matter at issue shall be referred either to the executives of the unions affected or to the London District Aircraft Committee on the one hand, and on the other to the Engineering Employers' Federation.

The Minister of Munitions, in view of the agreement, and having the same object as the parties, concurs in the arrangement. As a natural result, the decision to make the factory a national factory will be cancelled.

ENGLAND-EGYPT FLIGHT.

It was announced on August 11th that two Air Force officers, with two air mechanics, have just flown from England to Egypt.

The aeroplane used was of a type which has already seen considerable service at the front ; spare parts and other requirements were carried ; and this long flight, with one or two halts for petrol, etc., at suitable stopping-places, was in every respect a piece of routine work, and not a matter of special designing or organising.

The pace made was good throughout, and the machines arrived safe and on time in Egypt. The distance as the crow flies is over 2,000 miles.

A second machine of the same make has since made the same journey. The crew carried seems to indicate the type fairly clearly, though it is not yet officially announced.

THE ROYAL CANADIAN AIR SERVICE.

A Reuter's message from Ottawa on Aug. 9th states that the Department of Naval Service announces the immediate organisation of a Royal Canadian Air Service having for its primary object the defence of Canada's coasts, but men enlisting will be liable to service outside the Dominion if this should be necessary.

THE ZEPPELIN AEROPLANE.

The minute details given concerning the new Zeppelin Giant Aeroplane in this week's "Aeronautical Engineering" (Supplement) should be of intense interest to readers of this paper.

At the moment of going to press a letter has arrived from M. Lagorgette saying that further investigations disclose the possibility that the machine has a slight backward stagger, the interplane struts being at right angles to the chord of the wings instead of absolutely vertical.

It also seems possible that the machine was built at the Zeppelin Co.'s Lindau Works under licence to the Albatros Co., instead of being built at the Albatros works under licence to the Zeppelin Co. Nevertheless, it is an authentic Zeppelin aeroplane in either case.

AIR WORK IN THE THIRD BATTLE OF THE SOMME.

The Royal Air Force with the British Army in France played a most important part in the recent successes on the Somme.

The destruction by R.A.F. fighting pilots of large numbers of enemy aeroplanes made the way clear for wholesale attacks by low-flying aeroplanes upon German infantry, guns and transport, so disorganising and impeding what might otherwise have been an orderly retreat.

Two complete advanced aerodromes were captured, at one of which was found a five-engined bombing aeroplane, a type which has been in existence for some time, but not very much in evidence.

At the commencement of the advance on Aug. 8th all the German aerodromes in the sectors attacked were heavily bombed, and, as a result, for several hours not a single German aeroplane was able to leave them.

Subsequently, the Somme bridges were attacked, and a number destroyed by bombs, which resulted in great congestion of enemy traffic at other crossings.

The low-flying aeroplanes, which were so numerous as to need the greatest skill on the part of the pilots to avoid collisions, paid special attention to the crews of anti-tank guns, to troop trains, balloon teams and staff officers who had pressed forward to try and get a correct grasp of the situation.

A crowd of German soldiers, whose curiosity overcame their discretion, so that they assembled round a crashed British aeroplane, were attacked by another British aeroplane and paid dearly for their inquisitiveness.

One pilot who crashed in friendly territory dismounted his Lewis gun and acted temporarily as an infantryman, after which he borrowed a horse and rode to the rear in quest of another aeroplane.

THE DEATH OF CAPTAIN STRASSER.

A German official communiqué states that Capt. Strasser and the crew of an airship probably perished during the attack made on Monday night, Aug. 5th.

A report from Holland states that German papers express regret that one of the most valuable of their Zeppelins was destroyed, and that Capt. Strasser, the best Zeppelin commander, was killed. Capt. Strasser, who had been the leader of the principal raids against England, was decorated with high German orders, and he was one of the best-known officers of the German navy prior to 1913, when he was appointed leader of the Zeppelin fleet.

THE DEATH OF LIEUT. LOWENHARDT.

It was reported from Amsterdam on Aug. 12th that the well-known German aviator, Lt. Löwenhardt, has been killed.

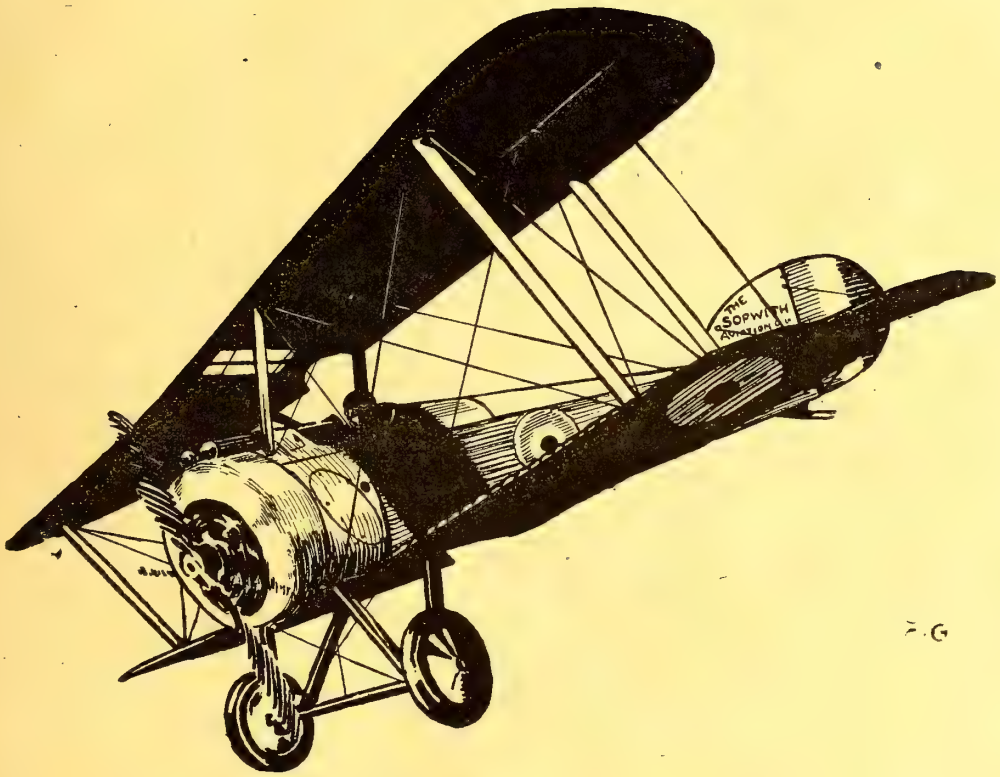
Lt. Löwenhardt was mentioned in the German official communiqué on Aug. 10th as having brought down his fifty-second and fifty-third aerial victims.

CONGRATULATIONS.

WADE—WARNE.—On Aug. 3rd, by the Islington Registrar, Walter Lewis Wade, son of the late Walter Charles and Mrs. Wade, of 110, Highbury New Park, London, N.5, was married to Ethel Florence Warne, daughter of the late Frederick George Warne, of Sydenham, and Mrs. Anne de Bathe, of Capel-le-Ferne, Folkestone.

[Walter Wade has been sole editorial assistant on The Aeroplane since the outbreak of war, and his initials, W. L. W., appended to various special articles, are well known to readers of this paper. One takes this opportunity of bearing testimony to his loyal and valuable work during the five years in which he has been connected with this paper, and one feels sure that his many friends in the Flying Services and in the Aircraft Industry will join with the present writer in wishing him and his bride long life and good fortune, and happiness.—C. G. G..]

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THE FIRST AMERICAN HANDLEY PAGE.

According to a report in "Aviation and Aeronautical Engineering" of July 15th, the Standard Aircraft Corporation of New York has completed its first Caproni and Handley Page bombers.

The Caproni was started on January 25th last, and left the works during the first week in May. The trial flights were delayed for six weeks pending the arrival of Liberty engines of recent production. The first flight on this machine was made on July 4th, and was reported to be successful in every respect.

The first Handley Page was publicly flown on July 6th, and demonstrated that it could carry double the load per horse power of the Caproni. This machine is of very recent type, and is said to be only 60 days behind the British production of similar types.

"Aviation" gives various interesting figures concerning the specification and performance of the Handley Page, which, however, it does not seem wise to repeat in this country. It was completed within 90 days of its commencement.

At the launching function Mr. W. A. Chamberlain, assistant works manager of the Handley Page Co., who supervised the construction of many machines in England, expressed the opinion that the machine was capable of making the transatlantic flight, via the Azores.

Colonel the Master of Sempill, accompanied by Capt. E. B. Waller, piloted the machine on its initial flight, and said that the machine handled as satisfactorily as the British model.

At the launching ceremony were: Messrs. John D. Ryan, chairman of the Aircraft Board; Howard Coffin, former chairman; Archer A. Landon, chief of the Production Division, Bureau of Aircraft Production; Major-General William Kenly, Director of Military Aeronautics, N.A., Major-General W. S. Brancker, R.A.F., and Sir Henry Fowler, K.B.E.

Mr. Benedict Crowel, Assistant Secretary for War, addressed those present, and read a homily on the necessity for the Americans not to be over-confident as to their achievements.

Sir Henry Fowler, Deputy Director of Aircraft Production, spoke of the machine "as an earnest of the work which is going to be done in other parts of the United States, to build up our ascendancy in the air."

Mr. John Ryan said that it was a matter of pride to him to witness the launching of a splendid aeroplane, a machine British in design and American in construction. He was glad to say that thousands of similar machines were under construction, all to be driven by the Liberty engine. The engine problem was of the most vital importance because the limiting factor of the aircraft production programme of every nation in the war is engines, whereas aeroplanes can be built in any number required.

Major-General Kenly congratulated the Standard employees upon their work, and said how much he appreciated it.

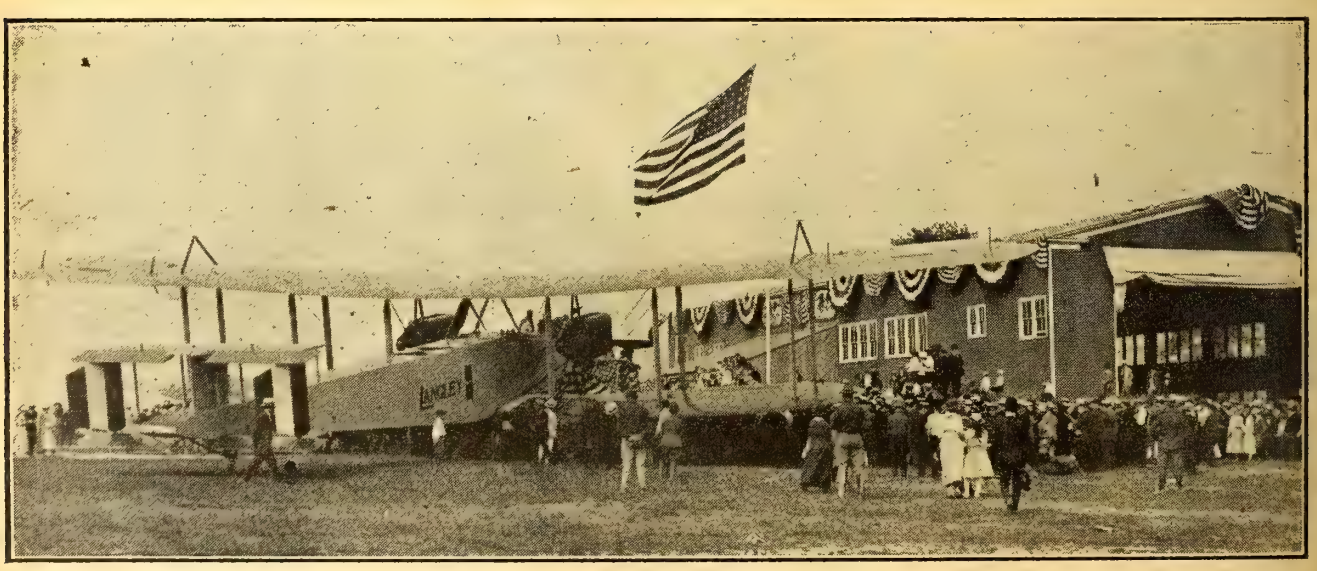
General Brancker said that the type of machine which was needed to cross the Rhine was the type before them at present. He also said that the Liberty engine was a success.

Mr. Samuel P. Langley, a nephew of the late Professor Samuel Pierpont Langley, and the nearest surviving male relative of the man who is generally regarded as the father of aero-dynamics, after whom the first American Handley Page has been named, spoke of the work of his uncle, and recalled how in 1887 at the Allegheny Observatory, a turntable operated by steam power furnished air currents for a series of experiments on the lifting force and resistance of various plane surfaces set at different angles. The result was recorded in a publication called "Experiments in Aerodynamics," published in 1891 by the Smithsonian Institute, followed by another work called "The Internal Work of the Wind," published in 1893. Thereafter followed the famous series of practical experiments with models on the Potomac river, and after successful flights of 3,000 feet the American War Department appropriated 50,000 dollars for the construction of a man-carrying machine, which, but for defects in launching gear, might very well have flown.

Mrs. Mingle, wife of the President of the Standard Aircraft Corporation, christened the machine "Langley," and it made its first flight, in which it reached a height of 3,500 feet.

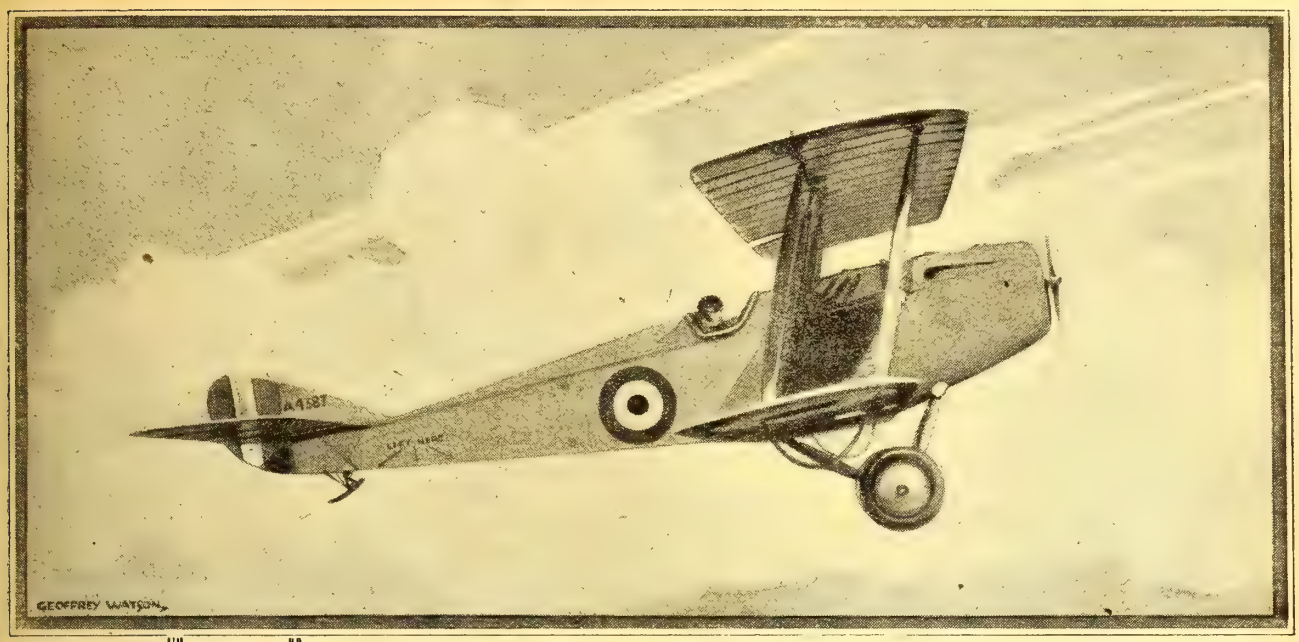


AN ANGLO-AMERICAN ALLIANCE.
Major-General W. S. Brancker, R.A.F., and Major G. K. Rhinehardt, U.S. Army, at the christening of the Langley-Page.



Official Photograph.

The Christening of the "LANGLEY-PAGE," the first American-built Handley Page bomber to be flown.





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GEOFFREY WATSON

FROM THE "LONDON GAZETTE."

AIR MINISTRY, August 3rd.

The King has been pleased to confer the following rewards on Officers of the Royal Air Force, in recognition of gallantry in flying operations against the enemy:—

A SECOND BAR TO THE DISTINGUISHED SERVICE ORDER.

Lt. (temp. Capt.) E. MANNOCK, D.S.O., M.C. (formerly R.E.)
This officer has now accounted for 48 enemy machines. His success is due to wonderful shooting and a determination to get to close quarters; to attain this he displays most skilled leadership and unfailing courage. These characteristics were markedly shown on a recent occasion when he attacked six hostile scouts, three of which he brought down. Later on the same day he attacked a two-seater, which crashed into a tree. (The announcement of award of Distinguished Service Order, and First Bar thereto, will be published in a later "Gazette.")

THE DISTINGUISHED SERVICE ORDER.

Lt. (temp. Capt.) J. GILMOUR, M.C. (formerly A. and S. Highrs.)
He is a most inspiriting patrol leader who has destroyed 23 enemy aircraft, and shot down eight others out of control. While leading an offensive patrol he shot down one enemy biplane in flames and drove down a second. A short time afterwards he, with four others, attacked about 40 enemy scouts. He himself destroyed one in the air, drove another out of control and a third in flames, successfully accounting for five enemy machines in one day.

Lt. F. R. MCCALL, M.C., D.F.C. (formerly Alberta R.)
A brilliant and gallant officer who has accounted for 14 enemy machines. On a recent date he destroyed four during a patrol in the morning, and another in the evening, in each case closing to point-blank range with his opponent. His courage and offensive spirit has inspired all who serve with him (The announcement of award of Distinguished Flying Cross to Lt. McCall is also contained in this "Gazette.")

THE DISTINGUISHED FLYING CROSS.

Lt. (temp. Capt.) R. AFFLECK.
For conspicuous gallantry and devotion to duty in bombing by night, despite adverse weather conditions, enemy lines of communication and aerodromes. During the last few months he has carried out many bombing raids, and has set a brilliant example of keenness and determination.

Lt. (temp. Capt.) S. ANDERSON.
A most successful leader of patrols who has often saved squadron casualties by the skilful manner in which he has kept his patrols in hand and in formation. On a recent date, while leading his formation, he was attacked by about forty aeroplanes. Both he and his observer were wounded, but with great gallantry he continued to keep the formation together, and led the same successfully back to his aerodrome. He has taken part in 53 bomb raids and five photographic reconnaissances.

Lt. L. A. ASHFIELD.
A very capable officer of exceptional judgment and courage. He has carried out 62 flights behind the enemy lines with invariable success. During the last few months he has engaged 17 enemy machines, and has been instrumental in destroying five. On one occasion he attacked five enemy aeroplanes, bringing down one in flames.

Lt. (temp. Capt.) E. D. ATKINSON.
A brilliant fighting pilot whose flight has proved very successful under his leadership, often in combats where the enemy formation was numerically superior. Capt. Atkinson destroyed single-handed five enemy machines during May, and previously, while serving with another squadron, he brought down two enemy aeroplanes and one balloon

Lt. G. G. BAILEY.
A successful fighting pilot who has destroyed on several occasions enemy machines. Lt. Bailey displays great gallantry and determination in carrying out his duties.

Capt. T. A. BATCHELOR.
Displayed great gallantry, determination and skill in a night bombing raid under exceptionally adverse conditions. Two machines set out on this raid, but an accident befell one of them, which gave the enemy warning, and Capt. Batchelor's machine was accordingly subjected to very intense fire. He continued his course and dropped his bombs on a vulnerable position in the enemy's strong post from a height of 500 ft. He was wounded in the arm, but managed with great difficulty to return. The loss of blood consequent on the wound made it very difficult to control his heavy machine, the petrol tank of which had been hit. He invariably displays great bravery and skill in action.

Lt. (Hon. Capt.) O. L. BEATER.
Has proved himself on many occasions a most skilful and gallant observer on long-distance bombing raids, bringing back much valuable information and many good photographs. He has taken part in 20 raids and eight photographic reconnaissances

Lt. (temp. Capt.) A. W. BEAUCHAMP-PROCTOR, M.C.
A brilliant and fearless leader of our offensive patrols. His formation has destroyed 13 enemy machines and brought down 13 more out of control in a period of a few months. On a recent morning his patrol of five aeroplanes attacked an enemy formation of 30 machines and was successful in destroying two of them. In the evening he again attacked an enemy formation with great dash, destroying one machine and forcing two others to collide, resulting in their destruction.

Capt. (temp. Maj.) W. A. BISHOP, V.C., D.S.O., M.C. (formerly Canadian Cavalry).
A most successful and fearless fighter in the air, whose acts of outstanding bravery have already been recognised by the awards of the Victoria Cross, Distinguished Service Order, Bar to the Distinguished Service Order, and Military Cross. For the award of the Distinguished Flying Cross now conferred upon him he has rendered signally valuable services in personally destroying 25 enemy machines in 12 days, five of which he destroyed on the last day of his service at the front. The total number of machines destroyed by this distinguished officer is 72, and his value as a moral factor to the Royal Air Force cannot be over-estimated.

Lt. H. BRIGGS.
A gallant officer whose perseverance and keenness sets a most valuable example to the officers of his squadron. During one week he carried out 12 successful shoots under difficult conditions, his flying time for the week being 22 hours.

Lt. (temp Capt.) F. T. BRIGHT.
A resolute, gallant, and skilful leader of long-distance night bombing raids, in 22 of which he had been engaged. On a recent occasion his formation succeeded in dropping incendiary and other bombs on 13 hangars belonging to the enemy, doing very great damage thereto.

Lt. E. G. BROOKES.
While leading a patrol of six machines, escort to a bombing formation, he drove off a patrol of 15 enemy scouts that was about to attack the bombers, shooting down one of the scouts in flames, and so enabled the bombers to complete their task. After protecting another bombing formation from a threatened attack, he escorted a third formation to and from the lines, although by that time the number of his machines was reduced to three. On the last journey two enemy triplanes attacked one of the bombers, whose observer had been killed; engaging them, he drove one down out of control and forced the others to retire. He is a skilful and fearless officer, who has done excellent work in reconnaissance and in attacking enemy troops close to the ground.

Lt. L. R. L. BROWN (formerly 2nd Canadian D.S. Column).
Whilst on counter-battery photography this officer was attacked by two triplanes and four biplanes. His gravity tank exploded and caught fire, but blew out. His centre section struts were shot through, also his wind shield. There were altogether 50 holes in his machine. After about a quarter of an hour's fighting he reached our lines. He then returned to complete his photography, climbing to 19,000 feet. In thus returning, after having been so badly shot about, he showed a splendid example of courage and determination.

Lt. (temp. Capt.) A. R. CHURCHMAN.
Within the past month this officer has been successful in rendering very valuable services in directing our artillery fire on enemy positions. Owing to his skill and judgment on many occasions concentration of our fire was brought on enemy batteries with such precision that great damage was effected.

Lt. W. G. CLAXTON.
This officer at all times shows fine courage and disregard of danger. He has accounted for six enemy aeroplanes and one kite balloon, three of the aeroplanes being destroyed and three driven down out of control. On a recent occasion, having destroyed a hostile balloon, he pursued an enemy scout 10 miles and eventually drove it down; he was then attacked by five enemy triplanes and other scouts, but managed to return to our lines, though his machine was riddled with bullets.

Lt. (temp. Capt.) A. CLAYDON (formerly Canadian Fd. Arty.)
Recently this officer, single-handed, went to the assistance of another pilot, who was attacked by 11 Fokker biplanes and 6 scouts. By his gallant conduct and skilful manœuvring he not only extricated the pilot, but drove down several of the enemy aeroplanes. He has shown great initiative and gallantry in locating, bombing, and attacking troops on the ground from low altitudes.

Lt. (temp. Capt.) P. J. CLAYSON, M.C.
A patrol leader of great skill, and a skilful marksman, whose personal fighting successes have proved of much value to his squadron. Captain Clayson's patrol frequently encountered enemy formations in superior numbers, but invariably succeeded in inflicting serious losses.

Lt. (Hon. Capt.) W. F. CLEGHORN.
A distinguished and gallant leader of bomb raids, in 59 of which he has been engaged. In his last engagement recently his formation was attacked by a large number of enemy aircraft, but, nevertheless, 68 bombs were dropped successfully on the objective, and in the fight which afterwards ensued three enemy aeroplanes were destroyed and five others brought down out of control.

Lt. (temp. Capt.) A. H. COBBY (Australian Flying Corps).
Has proved himself a very gallant and successful fighter and patrol leader, setting a fine example to the squadron. Within the last few months he has destroyed a number of enemy balloons and aeroplanes.

Lt. (temp. Maj.) R. Collishaw, D.S.O., D.S.C.
This officer is an exceptionally capable and efficient squadron commander, under whose leadership the squadron has maintained a high place in the Army Wing. He has carried out numerous solo patrols and led many offensive patrols, on all occasions engaging the enemy with great bravery and fearlessness. Up to date he has accounted for 47 enemy machines, 22 in the last 12 months.

Lt. (temp. Capt.) L. P. Coomes.
This officer displays conspicuous bravery and skill in attacking enemy aeroplanes. During the last three months he has accounted for five.

Temp. Lt. J. A. E. R. Daley (formerly B.W. Indies R.).
This officer has destroyed five enemy aeroplanes and two kite balloons, displaying marked skill and daring in these several actions, and also in attacking troops close to the ground.

Lt. (temp. Capt.) C. H. Darley, D.S.C.
An officer with a fine record of gallantry to his credit. During the past two years he has been flying in active operations, 12 months of which was on night flying bombing work, being on one occasion in the air in bad weather for 7½ hours. On several occasions he has carried out two raids on the same night, and during the past month he successfully attacked a very formidable enemy position from a height of 200 feet in the face of very intense fire.

Lt. V. Dreschfield.
This officer invariably shows the greatest gallantry and devotion to duty. During recent operations he has frequently engaged troops and transport, causing heavy casualties. On one occasion, at an altitude of 700 feet, two enemy aeroplanes were set alight by tracer ammunition fired from his Lewis gun. He has taken part in many successful bombing raids and long-distance reconnaissances.

Lt. H. Fall.
Has been very successful in bombing enemy positions and trains from low altitudes. During the past seven months he has taken part in 69 night-raiding expeditions. Lt. Fall has displayed great skill, courage, and determination.

Lt. (temp. Capt.) M. H. Findlay, D.S.C.
A skilful and courageous patrol leader. During the past few months this officer has destroyed seven enemy machines and brought down seven more out of control. One one occasion he fought an enemy machine from 18,000 feet down to an altitude of 10,000 feet, at which point he gained an advantage and destroyed his antagonist.

Lt. (temp. Capt.) J. H. Forman.
A skilful patrol leader who has displayed on all occasions a high standard of courage, endurance, and skill. In a period of 10 months he has been engaged on 77 offensive patrols, and has brought down three enemy aeroplanes in flames and five out of control.

Capt. H. G. Forrest (Australian Flying Corps).
His leadership of patrols has been characterised by great dash and determination whether on high or low work. He has displayed skill in manœuvring and boldness in attacking superior numbers.

Lt. (temp. Capt.) R. M. Foster.
This officer has taken part in numerous combats and led his patrols brilliantly; he has destroyed five hostile machines. On one occasion he attacked two biplanes single-handed; one he forced down and the other burst into flames and broke up in the air.

Capt. D. Gilley.
During a recent night-bombing raid on an enemy railway station he realised when gliding down towards his objective that he would overshoot his mark, so he opened out his engine at 1,000 feet in the face of very severe machine-gun fire, and climbed sufficiently high to enable him to get directly over his objective, in which he succeeded and dropped his bombs on the sidings from an altitude of 600 feet. He then descended to 200 feet and enabled his observer to fire several bursts of machine-gun fire into the station and sidings. He has successfully carried out many long distance raids, and invariably set a high standard of keenness and proficiency to his squadron.

Temp. Capt. F. Godfrey (late Middx. R.).
This officer has taken part in many offensive patrols. During recent operations he has accounted for eight enemy aeroplanes, proving himself at all times a skilful and bold airman.

Lt. J. E. Gurdon.
This officer is a brilliant fighting pilot who on all occasions shows great determination with entire disregard of personal danger. He has personally destroyed nine enemy machines. On a recent date when on offensive patrol with another Bristol fighter he attacked a formation of seven enemy machines; one of these he shot down in flames. The enemy were then reinforced by two other formations, which brought their number up to 20. Fighting continued for about half an hour when the Bristols broke off the engagement, their ammunition being exhausted. Only seven enemy machines remained, many having been seen to spin away, and one was shot down by this officer.

Lt. (temp. Capt.) R. Halley.
A gallant and determined leader in long-distance night bombing raiding. Has been most successful in many of these raids, generally under adverse weather conditions and intense anti-aircraft fire from the enemy, and having had to fly by compass course owing to density of mist. In his last raid the flight outward and homeward lasted eight hours.

Lt. H. N. Hampton.
He recently carried out a night reconnaissance lasting three hours; at times he descended to within 500 feet of the ground, following down his Michelin flares to this height in the face of intense machine-gun fire. By this means he and his observer were able to obtain valuable information. During the past five months he has taken part in forty-one bombing raids, many of which were a long distance over the enemy's lines.

Lt. W. F. J. Harvey.
As a fighting pilot this officer has the real offensive spirit regardless of personal danger. He has destroyed several enemy machines whilst fighting against superior numbers.

Lt. C. R. R. Hickey.
Has been engaged in numerous air battles with marked success during a period of twelve months. On a recent occasion he flew to the assistance of one of our machines which was being pressed by two enemy machines and succeeded in destroying one of them.

Sec. Lt. R. J. Hook (late Rifle Brigade).
He has carried out twenty-two night bombing raids, displaying great endurance and fearless disregard of self. On a recent occasion he carried out a comprehensive reconnaissance by night in heavy rain at a height of only 400 feet. He returned to his aerodrome in the face of a blinding storm after a flight of three hours.

Capt. W. H. Hubbard
During recent operations he has repeatedly descended to low altitudes to release his bombs and to open machine-gun fire on troops and transport. He has shown the greatest gallantry, judgment, and presence of mind. On several occasions he has attacked and driven down out of control enemy aeroplanes.

Lt. A. T. Laccaci.
This officer has taken part in many engagements, and he and his observer have been most successful in destroying enemy machines. A resolute and skilful airman.

Lt. (temp. Capt.) G. Irving.
He has carried out numerous offensive patrols, and under his able leadership many enemy formations have been successfully engaged. He has personally accounted for six enemy aircraft, and by his consistent keenness and fearlessness he sets a fine example to the pilots in his squadron.

Lt. (temp. Capt.) J. I. T. Jones, M.M.
In 11 days this officer attacked and destroyed six enemy aeroplanes, displaying great courage, skill and initiative.

Lt. W. E. F. Jones.
On a recent occasion this officer carried out a comprehensive reconnaissance by night in heavy rain at a height of only 400 feet. He returned to his aerodrome in the face of a blinding storm, after a flight of three hours. He has carried out 64 night-bombing raids. His courage and perseverance are exceptional.

Sec. Lt. (temp. Capt.) C. F. King, M.C.
He is a fine leader, who at all times shows great gallantry and skill in manœuvring; his energy and keenness have brought his flight to a high standard of efficiency. He frequently descends to low altitudes to obtain good results from bombing and shooting, and on several occasions he has brought down enemy aeroplanes.

Lt. (temp. Capt.) S. M. Kinkead, D.S.C.
A skilful and gallant leader, who has attacked enemy formations superior in numbers with marked success. In a recent engagement his patrol flew to the assistance of some of our machines which were greatly outnumbered by the enemy, and succeeded in accounting for three enemy machines and scattered the remainder.

Lt. F. J. Lain (late Border R.).
This officer has carried out 55 successful night-bombing raids on enemy lines of communication, aerodromes, etc. His work in reconnaissance, at times under very adverse weather conditions, has been of the greatest value.

Lt. (temp. Capt.) W. C. Lambert.
He has destroyed six enemy machines and driven down four others out of control, displaying at all times dash and determination. On one occasion, when attacked by two Fokker biplanes, he drove down one, engaged the other at 20 yards' range, and crashed it to earth.

Capt. M. Le Blanc-Smith
A very efficient officer, and successful patrol leader, who, during the late operations, has done great execution in attacking ground targets. On a recent occasion he attacked five enemy aeroplanes, destroying one and driving down another out of control.

Lt. W. H. Leete.
A very successful observer, who has been instrumental in bringing our heavy artillery fire on numerous occasions on the enemy's positions, causing great destruction.

Capt. C. N. Lowe, M.C.
This officer has destroyed five enemy machines and driven down two others out of control. On one occasion he attacked two enemy triplanes, although at the time only one of his guns was serviceable; he shot down one of the machines in flames. On another occasion, while leading a formation of eight scouts he engaged a hostile formation of 26 machines. Having shot down a Fokker biplane he went to the assistance of one of our scouts and drove the enemy machine down to 500 feet; at this low altitude half of a blade of his propeller was shot off by fire from the ground.

Lt. F. R. McCall, M.C. (formerly Alberta R.).
The officer has driven down four enemy machines which were seen to crash, and two others out of control. His determination and tenacity in attack is remarkable. On one occasion whilst acting as escort to reconnaissance machines he shot down an enemy machine which attempted to interrupt their work; he was then attacked by three enemy scouts, which, however, he skilfully managed to elude.

Lt. M. McConville, M.C. (late West Yorks R.).
This officer has carried out 62 bombing raids, flying at very low altitudes in the face of heavy anti-aircraft and machine-gun fire, being severely wounded on one occasion. Recently he carried out a reconnaissance under very trying conditions, heavy rain so obscured his vision that he was compelled to descend to within 500 feet of the ground; aided by numerous flares and Verey lights he completed his task in a most thorough manner.

Lt. (temp. Capt.) J. D. R. McDonald, M.C.
A dashing fighting pilot. In the past two months he has destroyed five enemy machines and brought down two others out of control. At all times he shows a fine offensive spirit and complete disregard of danger.

Lt. (temp. Capt.) G. E. H. McElroy, M.C.
A brilliant fighting pilot who has destroyed 35 machines and three kite balloons to date. He has led many offensive patrols with marked success, never hesitating to engage the enemy regardless of their being on many occasions in superior numbers. Under his dashing and skilful leadership his flight has largely contributed to the excellent record obtained by the squadron.

Lt. A. McGregor.
A most successful observer with marked initiative. During the past month he was engaged on one occasion at a pre-arranged height to range our artillery on an enemy aerodrome. The height was found to be too great owing to bad visibility, so he dropped to 7,000 feet, where he was met with intense enemy fire and was attacked by five enemy scouts, which he eventually succeeded in dispersing. Lt. McGregor then brought our artillery into play successfully. Six weeks ago he was engaged on similar duty and succeeded in bringing our artillery fire on seven hostile batteries. He failed to get a reply from our artillery to deal with an eighth enemy battery, so he descended to 1,000 feet and silenced it himself by machine-gun fire, after which he brought back a most valuable reconnaissance report.

Lt. R. L. Manuel (Australian Flying Corps).
During the past month, while on an offensive patrol, his machine was badly damaged in an encounter with an enemy aeroplane which he brought down out of control. On his return home he saw another enemy machine below him. At great personal risk, owing to the state of his machine, he nevertheless attacked and brought it down. He is a most skilful pilot of great determination.

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Lt. (temp. Capt.) J. M. Mason, D.S.C.
A most gallant and determined leader who has carried out 92 successful bombing raids on enemy aerodromes, dumps, and communications, frequently opposed by fierce offensive action on the part of the enemy scouts and in face of intense anti-aircraft fire. He displays coolness in action and skill in leadership, and inspires all by his fine achievements.

Capt. G. J. C. Maxwell, M.C.
This officer has at all times shown exceptional skill and gallantry and on numerous occasions has fought against greatly superior numbers. During the last six weeks he has brought down five enemy aeroplanes. Recently he approached unobserved to within 10 yards of three Fokker triplanes, one of which he shot down. He was chased for about nine miles by the remaining two until he met a formation of six Camels; these he led to attack some enemy aircraft, although he had only 25 minutes' petrol left.

Lt. (temp. Capt.) T. P. Middleton.
During the past two months this officer has been very successful as a fighting pilot, destroying six enemy machines in that time, two of them being triplanes. On one of these occasions the formation to which Capt. Middleton belonged (consisting of nine machines) attacked 15 enemy aeroplanes, and this officer shot one of them down.

Sec. Lt. (Hon. Lt.) A. Mills.
A capable and gallant observer who has been very successful in destroying enemy machines by reason of excellent marksmanship. He has accounted for many enemy aircraft in a short period of time, and has generally fought against larger formations than his own.

Sec. Lt. W. Noble (formerly Essex R.).
A skilful and determined observer who has been most successful in destroying enemy machines, very often when in superior strength to his own formation.

Sec. Lt. (temp. Lt.) W. O'Reilly-Patey (formerly London R.).
This officer has on several occasions bombed trains and troops at night most successfully from very low altitudes; his courage and consistent good work have been an inspiriting example to the squadron. On one occasion, having obtained two direct hits on a train from an altitude of 400 feet, he flew up and down firing at troops on the embankment with his machine-gun.

Lt. C. Parry.
This officer has taken part in 55 offensive patrols and several special missions, and has invariably shown great dash and gallantry. On one occasion he led his patrol to attack six Albatros scouts, and closed with them 3,000 feet over their aerodrome; two enemy aeroplanes were destroyed, one by himself; he also forced another to land away from the aerodrome. He led his patrol safely out of the fight.

Lt. (temp. Capt.) A. A. N. Pentland, M.C.
A gallant flight commander, who in the last three months has destroyed two enemy machines and driven down four out of control. Recently, whilst on special patrol, he, single-handed, attacked four enemy aeroplanes; having driven down one out of control, he engaged the leader, damaged his engine, and compelled him to glide to his lines. One of the remaining machines followed the leader, but he attacked the other and drove it down in a steep dive.

Capt. R. C. Phillipps, M.C. (Australian Flying Corps).
Whilst on offensive patrol this officer destroyed personally four enemy aeroplanes; he has also shown the greatest gallantry during the recent operations in attacking troops and transports on the roads, and dropping bombs from very low altitudes.

Lt. (temp. Capt.) S. N. Pike.
For conspicuous gallantry and skill in bombing by night the enemy lines of communication, their aerodromes, and billets. He has seldom been frustrated from reaching his objective, even in most adverse weather conditions, and in face of strong enemy opposition.

Lt. C. R. Pithey.
When on reconnaissance 8,000 yards behind the enemy lines he saw a hostile balloon on the ground; descending to 1,700 feet he and his observer engaged and destroyed it. He then completed his reconnaissance. On another occasion, when on photography work, he was attacked by nine hostile scouts. By skilful manœuvring he enabled his observer to shoot down three; the remaining six dispersed. He displays the greatest courage and determination in photographic and reconnaissance work.

Lt. (temp. Capt.) F. C. Ransley.
This officer displays conspicuous gallantry and skill. On a recent occasion, while on patrol, he was attacked by seven enemy scouts; he and his observer drove down two, and by skilful manœuvre and dash he rallied his formation, which were being driven down, and succeeded in driving off the remaining enemy scouts. He has, in all, destroyed three hostile machines and driven down three others completely out of control.

Lt. (Hon. Capt.) W. O. Redgate.
On an occasion during the past two months when leading an offensive patrol of five machines he observed an enemy formation of 12 aeroplanes attacking another formation of our scouts. He at once led his patrol to the aid of our second patrol, and as he approached it two enemy scouts dived at him. By skilful piloting he placed himself behind one of these machines and, diving on it, drove it to destruction. Capt. Redgate has accounted for seven enemy machines in all, and displays enterprise and courage on all occasions.

Lt. R. H. Reece.
As an observer to Capt. R. Halley in a long-distance night-bombing raid this officer rendered very valuable service in dropping bombs on a great many war factories (which caused explosions therein), being exposed to very intense anti-aircraft fire from the enemy's guns. Lt. Reece has been engaged in 29 raids, and has displayed marked efficiency in this work.

Lt. A. C. Reid (formerly R.E.).
When engaging a column of infantry at a very low altitude this officer saw a hostile balloon on the ground. This he attacked and burnt. On the two following days he shot down two aeroplanes, and a few days later destroyed a third.

Sec. Lt. H. Rhodes.
As an observer this officer has shown marked ability, often under most difficult conditions. On one occasion when behind the enemy lines he saw a hostile balloon on the ground. He engaged and destroyed it from a height of 1,700 feet. On another occasion his machine was attacked by nine enemy scouts, which dived on the machine in pairs. He shot down three, one being seen to crash and two being brought down out of control. The remainder dispersed.

Sec. Lt. A. W. Robertson.
A very gallant and determined pilot. Whilst engaged in a long-distance bombing raid the formation of which this officer was acting leader was heavily attacked by hostile aircraft whilst over the objective. He took a leading and brilliant part in the action, and received a severe wound which paralysed his right arm. Despite this, he succeeded in flying home.

Lt. (temp. Capt.) H. L. Rough.
A keen and gallant officer possessing great skill and judgment. He has carried out 26 successful bombing raids and five photographic long-distance flights. On a recent occasion, when low bombing, having obtained a direct hit on a limber, he dived to 700 feet and by skilful manœuvring three enemy aeroplanes on the ground were set on fire, one by a direct hit with a bomb, and two by observer's fire. During the whole time his machine was subjected to heavy machine-gun fire. With the assistance of his observer, he brought his machine safely back, though he was shot through the leg.

Capt. R. H. Rusby.
A patrol leader of great enterprise and courage. During the last six weeks he has destroyed five enemy machines, and previously he has destroyed an enemy kite balloon and a two-seater aeroplane.

Lt. A. W. Saunders.
A gallant and determined officer whose fighting spirit and enthusiasm has been a splendid example to his squadron. On one occasion whilst leading his formation of six machines he attacked six enemy aeroplanes. Diving from 11,000 to 3,000 feet, he singled out a group of three, and shot down one. He then engaged the other two, which in their endeavour to get away collided and crashed.

Lt. (temp. Capt.) R. C. Savery.
This officer has taken part in many long-distance night-bombing raids, attacking enemy aerodromes at low altitudes in the face of severe fire from machine and anti-aircraft guns. On one occasion recently he bombed successfully an enemy machine which was on a searchlight flare-path in the aerodrome ground. Capt. Savery possesses initiative and resource in a high degree.

Sec. Lt. (Hon. Lt.) B. E. Scott, M.C. (late Canadian Field Arty.).
Whilst on counter-battery attack patrol, flying at a height of 1,500 feet, this officer's petrol tank was struck by machine-gun fire from the ground. As much petrol was escaping, he climbed out on the right wing and attempted to plug the hole, but finding he was unable to reach it, he returned to his seat for the spare "Cloche"; he then again climbed back to the tank and succeeded in plugging the hole. During the whole time he was under heavy anti-aircraft and machine-gun fire. The pilot then decided to carry on the patrol, and much valuable information was obtained.

Lt. L. R. Shoebottom.
A pilot of skill, courage, and determination On one day within the past month he had been in the air for 4¾ hours, and, on returning, learned that a long-distance bombing raid would take place that night. He immediately obtained permission to join in the raid, and was in the air for 5¾ hours on this expedition—a total period of 10 hours' flying in a 12-hour day. This officer has been successful on numerous occasions in bombing expeditions by night, and displays a fine spirit of perseverance in all difficulties.

Lt. (temp. Capt.) G. E. Siedle.
This officer has been engaged in 79 successful bombing raids on enemy dumps, lines of communication, railway junctions and aerodromes, and has always displayed skill and gallantry. Great damage has been done in these raids. On a recent occasion his machine was badly hit, nearly all the controls being damaged, as well as portions of the woodwork. Although stunned in this encounter, he managed to land skilfully in one of our aerodromes.

Lt. (temp. Capt.) T. L. Simpson (Aust. F.C.).
An officer of exceptional ability, courage, and determination. He has directed our artillery fire on 40 occasions on hostile batteries, and has taken over 500 photographs of enemy positions. He was attacked by six triplanes on one occasion whilst engaged in photographing the enemy positions, and managed to hold his own until our scouts drove them off. Later, he was again attacked by a large enemy formation, but he skilfully out-manœuvred them. Recently, whilst on patrol, he located eight enemy batteries, upon which he directed a concentration of our artillery fire. On this occasion he was wounded by anti-aircraft fire whilst flying low.

Lt. (temp. Capt.) J. A. Slater, M.C.
This officer has led numerous offensive patrols with the utmost skill and determination, and it is entirely due to his fine leadership that many enemy aircraft have been destroyed with the minimum of casualties to his formation

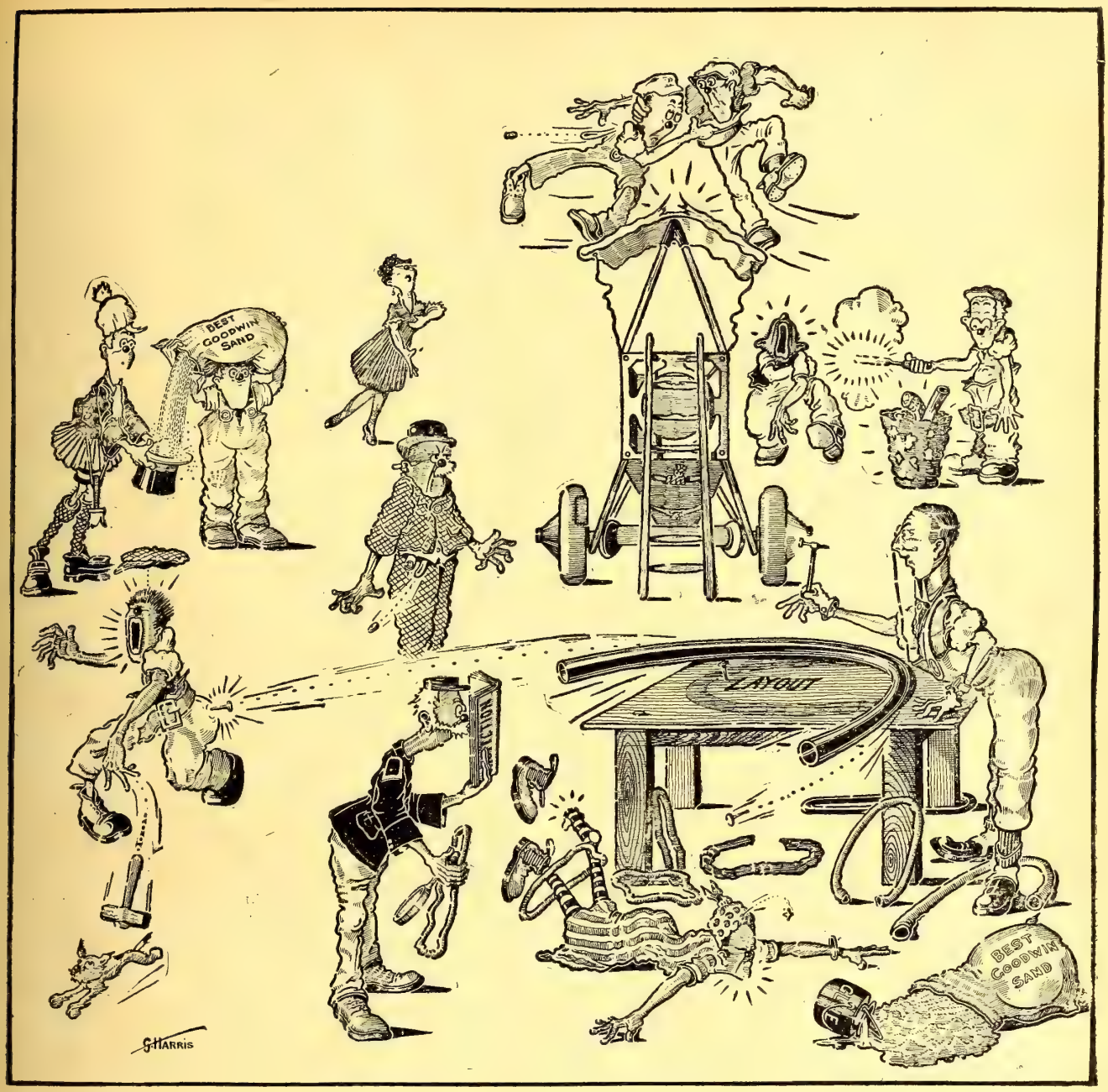
Lt. (temp. Capt.) W. D. Thom.
A gallant and capable leader in long-distance night-bombing raids, in 18 of which he has taken part during a period of six weeks. During the last raid his formation was attacked by 13 enemy machines, but he nevertheless managed to drop his bombs on his objective, direct hits being obtained, and he also succeeded in destroying an enemy aeroplane.

Capt. (temp. Maj.) G. L. Thomson, D.S.C.
This officer has carried out 340 hours' flying, and has taken part in 14 bombing raids. In one of the latter he led his formation to destroy a bridge over a canal; he flew at a considerable altitude over the objective, watching each machine drop its bombs, and endeavoured to observe the results. After all his machines had completed the raid and departed for the lines, he glided down and passed over the bridge at 140 feet altitude. In face of very severe machine-gun fire he crossed and re crossed the objective in order to ascertain the results obtained. No material damage being apparent, he flew across it again at 100 feet altitude, dropping his bombs in a final attempt to destroy the bridge. He is a fine leader, and the excellent spirit in his squadron is largely due to his personal example.

Lt. (temp. Capt.) J. Todd, M.C. (formerly No. 70 Sqdn.).
With four other officers he engaged 10 enemy scouts, shooting down one; later on the same day he shot down another in flames. In addition to these, during the last two months he has shot down seven enemy machines. His gallantry in leading his flight into action against enemy patrols of superior numbers has been an inspiring example. (The announcement of award of Military Cross will appeal in a later "Gazette.")

Lt. J. M. Todd (Obsr.)
This officer has taken part in eight successful long-distance bombing raids, displaying great courage and determination, combined with skill of very marked character. On one occasion his was the only machine out of seven that reached the objective, which was successfully bombed

Lt. E. F. Van Der Riet.
This officer has taken part in 38 raids, showing consistent determination and skill. During one raid the formation of which he was the leader was attacked when over the objective by 25 enemy aeroplanes, and a running fight ensued to our lines, a distance of 40



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miles. By his skilful and resolute leadership he brought his formation back safely, destroying two enemy aeroplanes.

Lt. C. J. Ventner.
During recent operations this officer shot down five enemy aeroplanes, one of which he followed down to 500 feet, when it was seen to fall. He is a bold and skilful airman.

Lt. H. G. Watson (Australian Flying Corps).
Whilst on offensive patrol he encountered several Pfalz scouts, one of which he shot down. He has also in three weeks shot down four enemy machines and destroyed a balloon, attacking the latter at 6,000 feet, following it down to 1,000 feet, when it burst into flames.

Lt. D. J. Weston.
A bold and skilful airman, who has accounted for six enemy machines. He has been generally engaged against superior numbers and always with success.

Lt. (temp. Capt.) A. H. Whistler.
A very courageous and enterprising patrol leader, who has rendered valuable services. He has done exceptionally good work in attacking ground targets, which he engages at very low altitudes. During the past month his patrol attacked eight enemy scouts who were flying above him. He attacked a triplane and brought it down in a crash, and while thus himself engaged another of his pilots destroyed a second enemy machine. The remainder of the enemy formation were then driven off.

Lt. J. L. M. White (late Canadian Machine Gun Corps).
This officer is distinguished for his bravery and dash in action, never hesitating to attack, regardless of the enemy's numerical superiority. He has destroyed three enemy aircraft and driven down two out of control. In addition he has carried out most valuable reconaissance service at low altitudes.

Sec. Lt. J. McK Young, D.S.M.
A gallant and enterprising bomb-dropper, who has been engaged in 39 raids with excellent results. Many direct hits were obtained in these raids, causing great explosions in enemy war factories and docks.

Capt. W. F. Young.
A gallant, skilful, and determined patrol leader. During the last few months he has destroyed five enemy machines, and previous to joining his present squadron he accounted for three more.

Temp. Lt. G. H. Hobson, formerly Northd. Fus.), Lt. (temp. Capt.) A. O. Lewis-Roberts, Sec. Lt. E. N. Lohmeyer, Sec. Lt. G. N. Sellers (formerly West Yorks R.), Lt. C. C. White, Lt. R. Wilson.
These officers carried out a night reconnaissance under exceptionally bad weather conditions, the clouds varying in height from 500 to 1,500 feet. A strong wind was blowing, with heavy rainstorms. Owing to the low altitude at which the reconnaissance was conducted it was impossible to avoid searchlights, and they were subjected to heavy anti-aircraft fire. Under these conditions the successful completion of the reconnaissance was a most gallant effort on the part of the officers concerned, calling for courage, determination, and technical skill worthy of the highest praise.

Lt. H. B. Davies (Obsr.), Lt. N. N. Young (Pilot).
Whilst engaged during the past month on a bombing raid they observed a large amount of rolling stock at a railway siding. The pilot, Lt. Young, brought his machine down to within 2,000 feet from the ground after releasing his bombs, and Lt. Davies then made exhaustive reconnaissance of the area, notwithstanding an intense concentration of anti-aircraft and machine-gun fire which the enemy brought to bear upon the machine. Whilst engaged on this reconnaissance numerous groups of enemy troops engaged on the railway trucks were scattered in all directions by fire from the aeroplane. On completion of this duty these two officers located a very active enemy anti-aircraft battery, and immediately directed the attention of our artillery thereto, which resulted in silencing it, consequent on an explosion which followed a salvo. Courage, determination, and ability are the marked qualities of these officers.

Lt. J. M. Glaisher, Lt. G. A. King (Obsr.).
While proceeding on a bombing raid last month these officers were attacked from behind by ten enemy scouts. The observer, Lt. King, opened fire on their leader, who went down, diving vertically, his machine emitting black clouds of smoke. After some minutes' further fighting the pilot, Lt. Glaisher, was able to fire a long burst at another of the enemy scouts, which fell out of control in the same plight as the first-mentioned. They then proceeded on their mission and dropped their bombs successfully. These officers have carried out work of high merit in reconnoitring enemy trenches from low altitudes, regardless of personal risks, displaying a fine spirit of gallantry and determination.

* * *

Awarded the Distinguished Service Order for gallantry and distinguished service in operations in Mesopotamia:—
Maj. and temp. Lt.-Col. J. E. Tennant, M.C. (formerly Bt. Maj. Scots Guards).
The following officers have been mentioned in dispatches and reports for distinguished services rendered:—
Lt. (temp. Capt.) P. Ll. Hunting (Mesopotamia).
Capt. L. M. Lilley (Mesopotamia).
Lt. (temp. Capt.) A. B. Shearer (formerly No. 3 Wing)
First Lt. S. R. Simmons, United States Air Service.—For very valuable services rendered on the occasion of a serious fire at an aerodrome.

The Air Force Cross
Capt. (Hon. Maj.) R. M. Hill, M.C., Squadron Commander, Experimental Flight.
Capt. E. P. Will, Seaplane Pilot.

War Office, August 6th.

The names of the following have been brought to the notice of the Secretary of State for War by Lt.-Gen. Sir J. L. van Deventer, K.C.B., Commanding-in-Chief, British Forces East Africa, for distinguished services during the operations from May 30th to December, 1917, described in his dispatch of January 21st:—

Royal Air Force.
Arbuthnot, Sec. Lt. N. B. (frmly. R.F.C.); Baillie, Sec Lt. (temp. Lt.) G. (frmly. R.F.C.); Bowhill, Maj (temp Lt.-Col.) F. W., D.S.O. (frmly. R.N.A.S.); Brown, Lt. W. P. (frmly. Yeo.); Gifford, Capt. W. R. B. (frmly. Middx. R.); Way, Lt. F. V. (frmly R.F.C.); Atkins, Z252 Serjt. H., S.A., R.A.F; Austen, Z213 1st Cl. A.M., C. A., R.A.F.; Blyth, Z132 Cpl. H. A., R.A.F.; Booer, Z126 Cpl. A., S.A., R.F.A.; Chivers, Z177 Serjt. H., R.A.F.; Elliott, Z78 1st Cl. A.M., J. S., R.A.F.; MacLean, Z138 Cpl. L. S., R.A.F.; Pearsall, Z273 1st Cl. A.M., S. C., R.A.F.; Skitt, Z306 Cpl. C., R.A.F.; Stockman, Z528 2nd Cl. A.M., S., R.A.F.; Whitmill, Z189 Serjt. E., R.A.F.; Wilkinson, Z330 2nd Cl. A.M., H., R.A.F.

* * *

The King has been pleased to approve of the award of the Meritorious Service Medal to the following for gallantry in the performance of military duty:—
43137 1st Cl. Air Mech. J. I. Hardy, R.A.F. (Belper).
42174 Pte. A. Mill, R.A.M.C., attd. R.A.F. (Cowdenheath).

The King has approved of the colour of the riband of the Victoria Cross being in future the same for all Services, the red riband of the Army Victoria Cross being universal for the Navy (instead of the blue riband hitherto used), Army and Royal Air Force.

Air Ministry, August 6th.

R.A.F.—The follg. temp. appt. is made at the Air Ministry:—
Staff Officer, 2nd Cl.—Capt. Hon. G. St. J. Broderick, M.C., and to be temp. Maj. while so empld., vice Capt.-(temp. Maj.) W. W. Tullis, August 4th.
The follg. temp. appts. are made:—
Staff Officers, 1st Cl.—And to be temp. Lt.-Cols. while so empld., if not already holding that rank:—H. M. M. Robertson, M.C. (Maj., R.A.), and is granted a temp. commn. as Maj., April 1st; Maj. A. C. Winter, April 10th. (Substituted for notification in "Gazette," May 3rd; Lt.-Col. E. B. Gordon, D.S.O., June 15th; Lt.-Col. R. C Donaldson-Hudson, D.S.O., June 20th
Staff Officers, 2nd Cl.—Capt. (temp. Maj.) J. W Burt, Lt (temp. Capt.) F. G. Stammers, and to be temp. Maj. while so empld., Capt. (temp. Maj.) W. G. P. Young, June 15th; Capt. (temp. Maj.) C. S. Macnab, June 30th.
Maj. J. W. K. Allsop relinquishes his appt. as Staff Officer, 2nd Cl., July 17th.
The date of appt. of the follg. Officers, notified in "Gazette," July 2nd, is April 1st:—Maj. H. A. R. Aubrey, M.C., Lt (temp. Maj.) R. Addenbrooke-Prout, M.C., Capt. (temp. Maj.) C. C. Boyd-Rochfort, Capt. (temp. Maj.) A. J. Child, M.C., Lt. (temp. Maj.) T. M. Eggar, Capt. (temp. Maj.) E. C. Fulton, Capt. (temp. Maj.) C. F. Gordon, M.C. Lt. (temp. Maj.) F. S. Isaac, Capt. (temp. Maj.) G. C. May.
Staff Officers, 3rd Cl.—And to be temp. Capts. while so empld. if not already holding that rank:—Lt. P. H. Morrissey, April 1st; Lt. V. Stranders, April 24th; Capt. T. B. Marson, vice Lt. (temp. Capt.) F. G. Stammers, June 15th; Lt. P. A. Simmons, June 18th; Capt. R. Belli-Bivar, June 20th
The date of appt. of the follg. Officers, notified in "Gazette," July 2nd, is April 1st:—Capt. C. G. Beatson, Capt. W. S. Evans, Capt. W. J. J. E. M. Everard, Lt. (temp. Capt.) S. D. Felkin, Capt. J. G. Howell, M.C., Lt. (temp. Capt.) P. C. Hoyland, Capt J. Selwyn, Lt (temp. Capt.) F. G. Stammers, Capt. G. T. Tait, Lt. (temp. Capt.) J. S. Webb, Capt. R. Whittaker.
Flying Branch.—The follg. Capts. (temp. Majs.) to be temp. Lt. Cols. while empld. as Lt.-Cols. (A. and S.):—S. H. B Harris, April 1st; G. L. Thomson, D.S.C., D.F.C., April 27th.
Maj. R. S. Robinson to be temp. Lt.-Col. while empld. at Lt.-Col. (Dir.), August 1st.
Capt. (temp. Maj.) R. J. J. Hope-Vere to be temp. Lt.-Col. while empld., as Lt.-Col. (S.), July 26th.
Capt. C. C. Durston to be temp. Maj. while empld. as Maj. (A. and S.), July 27th.
Maj. J. P. Wilson, D.S.C., to be Maj. (A. and S.), from (Ad.) July 29th.
Lts. to be temp. Capts. while empld. as Capts. (A.):—F. G. Powell, July 17th; C. L. King, July 22nd; C. L. Baldwin, C. McM. Laing, M.C., F. J. Tanner, July 23rd; E. N. Griffith, H. G. Jackson, J. P. Seabrook, August 1st; J. E. Phillips, J. McD. Walker, J. R. Webb, August 2nd.
Lts. to be temp. Capts. while empld. as Capts. (A. and S.):—H. M. Coombs, W. A. Rochelle, July 4th; H. J. Burden, July 9th; M. C. McGregor, July 22nd; A. H. Flower, W. K. Mercer, July 24th; L. R. Charron, July 26th.
Lt. (temp. Capt.) H. D. Williams retains his temp rank while empld. as Capt. (A. and S.), from (S.O.), August 1st.
Lt. G. O. Lightbourn to be temp. Capt. while empld as Capt. (K.B.), July 9th.
The follg. Flt. Cadets are granted temp. commns. as Sec. Lt. (A.):—P. V. Birchard, C. G. Ellis, J. M. Loggie, A. M. Smith, C. C. Tait, June 3rd; A. W. Allis, M. E. Atkey, C. F. Barton, A. Bentley, H. T. B Bentley, J. H. Blackey, H. A. Bradshaw, R. E. Brown, O. W. E Crawford, W. F. Caldwell, F. J. Currier, R. R. Drysdale, J. O. Dufort, H. E. Fisher, S. J. Graham, F. S. Gregson, W. J. Hatrick, L. F. Hawley, H. Hollick-Kenyon, H. J. Keddy, J. R. Kennedy, L. W. Kidd, H. H. Lawson, H. L. Lobb, J. A. MacKay, C. McG. Martin, W. H. McCann, L. D. McCarthy, D. H. McGibbon, D. A. McIntyre, R. H. McKee, G. E. McLeod, O. J. McNally, H. R. Messinger, B. G. Morgan, R. Morrison, E. J. Murray, W. B. Penney, C. A. Pieper, B. H. Redner, C. G. Rich, T. F. Sanderson, J. S. Selak, C. S. Smith, G. R. Spradbrow, R. C. Styles, P. A. Timmons, H. Pinkerton, June 6th; W. H. Moore, June 7th; C. R. Abell, E. C. Bigelow, P. H. Carson, T. H. Carter, H. Coyles, R. P. D'Alton, T. A. Duval, H. Egan, S. C Elliot, W. Edwards, H. W. Gill, D. E. Gray, W. J. Griffith, M. F. Hall, A. W. Hofmeister, C. D. Lang, J. G. Lethbridge, J. B. Little, J. L. Machon, D. G. MacSwiney, C. C. Marshall, I. M. Martin, K. P. McGowan, A. S. McGrath, G. C. Mitchell, F. C. Murray, H. A. Neate, C. Nickle, W. T. Parker, W. Pendleton, F. C. Pepino, R. I. Quigg, J. W. Ross, W. R. Sisson, T. A. Smith, W. R. Young, W. H. Lange, W. Murphy, E. W. Williams, June 13th; G. E. De Siena, June 15th; H. C. Anderson, W. C. Angus, C. H. Alvord, C. E. Belanger, D. A. Black, R. S. Bowen, H. C. Brown, C. P. Buker, R. H. Bullock, R. B. Butler, L. S. Campbell, J. E. Charlebois, L. F. Chisenhall, G. E. Clifford, W. H. Corsan, A. Crockard, J. W. Dempsey, A. W. Field, H. C. Fox, F. Garnett, W. H. Herold, E. L. Humphreys, J. R. Johnson, W. P. Loomis, J. W. Lyrell, F. A. Maples, G. M. Marshall, N. T. May, C. W. Meyers, J. A. Murray, H N. Nelson, T. Nibset, E. J. Parker, H. H. Pheeney, W. Shorrock, R. P. Stockton, H. R. Smith, G. H. Swan, W. L. Taylor, H. R. Waddell, T. L Watson, N. A. D. Cowan, M. Crawford, June 20th; G. Abrahams, B. E. Bayne, L. Bennett, V. A. Braban, E. Brandt, F. Charlesworth, G. L. Coffing, F. L. J. Cook, W. E. Cook, D. M. Crater, H. G. Darroch, G. E. Driscoll, E. L. Fitzsimmons, A. W. Forsyth, H. E. Givan, J. E. Goudey, C. G. Grant, F. S. Griffis, J. C. Hamilton, R. E. Heartz, A. W. Hill, F. K. Hope, S. A. Jefferd, P. B. Keffer, C. W. King, H. Lackey, E. R. Livingston, W. C. Louttit, E. G. MacKay, S. A. Marden, W. T. Martin, W. H. McCardell, W. G. McGruther, J. B. McIntosh, E. L. Morley, St. C. M. O'Connor, E. S. Rippon, D. S. Robertson, R. M. Smith, W. P. Smail, A. H. Smith, A. Smedley, J. D. Stephen, E. A. Thomas, P. H. Wade, H. T. Watts, W. H. Williams, June 27th.
The follg. Flt. Cadets are granted temp. commns. as Sec. Lts. (A. and S.):—L. F. Henry, June 10th; J. A. Sweetlove, W. E. Dipple, June 11th; J. Brown, H. C. Comben, H Noble, V. A. J. Wagstaff, J. E. Wooding, July 9th; E. V. Evans, W. J. Gibson, July 13th; C. A. Matthews, July 14th; H. L. Miller, H. B. Mills, July 18th; R. B. Mumford, July 19th.
The follg. prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (A. and S.):—A. H. Matthews, May 15th; R. A. H. Shelford, July 19th.
V. A. Leppan (late Lt., S.A. Forces) is granted a temp. commn. as Sec. Lt., and to be Hon. Lt. (A. and S.), August 1st.
J. M. Heathcote is granted a temp. commn. as Sec. Lt. (A. and S.), Aug. 6th.
H. B. King (late Lt., S.F. Forces) is granted a temp. commn. as Sec. Lt. (Dir.), and to be Hon. Lt., Aug. 1st.
Sec. Lt. J. A. Hannigan (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec Lt (K.B.), July 10th.

(*Continued on page .*)



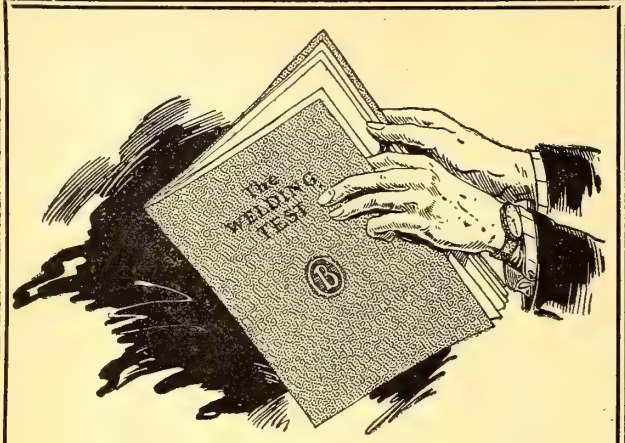
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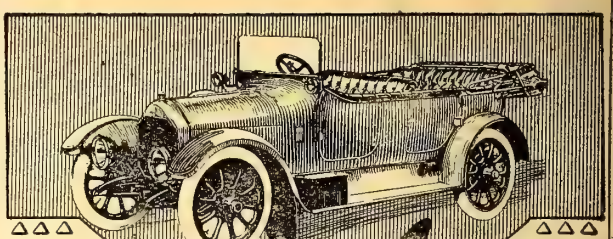
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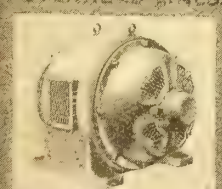
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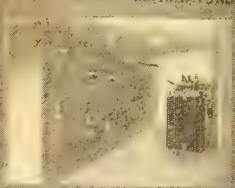
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THE ZEPPELIN BIPLANE.

BY JEAN LAGORGETTE.

M. Jean Lagorgette has, one is glad to say, contributed to THE AEROPLANE the following valuable description of the first German "Giant Aeroplane" to fall into the hands of the Allies. His drawings are a reconstruction of the wreckage of one of these machines, and he has furnished with the drawings a description considerably more elaborate than those which have so far been published, and sets forth an identity hitherto unsuspected concerning the character and construction of these machines. M. Lagorgette writes as follows:—

The "Lizenz" Joke.

On June 4th, 1918, a giant German aeroplane was captured on the French front. This has been called by various papers "The Lizenz" type, and it has been described in a manner which entirely lacks exactitude. It is true that some months before in a single night two at least of its relatives loaded with bombs of a thousand kilogrammes were lost at sea in the course of a raid by six similar machines on the English coast, but the one described is the only specimen of these famous "Dreadnoughts of the Air" in the possession of the Allies at the time of writing.

When captured it was in a sufficiently bad state, as photographs published in the illustrated papers have shown. Burnt by its crew, broken, and copiously pillaged in the customary way, then transported in pieces, some perseverance has been necessary in working out the reconstruction of this immense carcase—a new Diplodocus—of which the vertebræ were considerably deformed. This reconstruction differs quite considerably from previous descriptions, but so far as it goes, except perhaps for some intimate details, I guarantee its rigorous exactitude.

As to those fanciful publications, the least that one can say without exaggeration is that for so many words, figures and characteristics, there are an equal number of gross errors.

First of all, as regards its name and place of birth, on the faith of vague information they have talked of "Lizenz Avions." It was assumed that the captured avion had been constructed by the "Lizenz Company," an unknown firm, newly born, which as an initial essay had succeeded in producing this colossus where better prepared establishments had failed. This would have been as singular as if an avion had been designed by "Monsieur Brevêt," or as if railway carriages had been built by the well-known firm "Smokers."

It therefore seems probable that this quaint avion has been conceived and designed by a certain firm and has been constructed "under licence" in another workshop, as is commonly the case in Germany where workshops deprived of their own personal models are obliged to construct models accepted in small numbers by the Authorities, following the tendency which is becoming general in France since there has been an attempt at the unification of types.

The Real Zeppelin.

But who, then, was this mysterious firm of which the name has never yet been pronounced? I affirm as certain that the whole business is concerned with a Zeppelin aeroplane constructed by the Albatros firm. It is not, therefore, by way of metaphor that I describe these "New Zeppelins," these giants of the air, and anyone can without fear of error substitute the name "Riesenflugzeug-Zeppelin-Albatros," or briefly "Zeppelin," for the anonymous appellation of the giant aeroplane.

Therefore, henceforth "Zeppelin" will signify an avion (aeroplane of war) more often undoubtedly than dirigible balloon, for the manufacture of the latter is being slowed down even for the German Navy. Let us remark in passing that no one would be better qualified than the Zeppelin firm to proclaim in this indirect but formal fashion the fallibility of the colossal balloons, hitherto the pride of Germany—at least for the present epoch, and, above all, in view of the needs of war, even over the sea.

It does not seem to me doubtful that this model of giant avion has been made the object of a patent by the Zeppelin firm. I admit it less because the letter Z is painted on many pieces of the machine than because the letters L.Z., with the Z reposing between two branches of the L, are punched on a single tiny piece of aluminium. These initials before the war designated the Zeppelin airships intended for commercial transport, and signify that this particular piece came out of the workshops of the Luftschiffbau Zeppelin, or Zeppelin Airship Factory at Friedrichshafen, which is distinct from the Friedrichshafen Company, the creator of the twin-engined machine of its name.

This deduction is corroborated not only by the colossal scale of the avion, but by the amount of aluminium which is employed therein. By this word one designates here all species of duralumin, used not only in sheet and in tube, but in U-shaped bars, as well as in certain particularities and forms of construction, such as ribs of aluminium, girder-work in the fixed tail-planes and fins, and in all the control planes.

Even the zig-zag disposition, although in wood, used in the wings and in the tail-plane, the mode of fixing the cables and struts of the wings and the cabane, and of the fuselage, as well as in many details described hereafter, indicate Zeppelin construction.

It is probable that the first of these giant avions was tested at the beginning of 1917, near Friedrichshafen on Lake Constance.

The Albatros Share.

I consider, on the other hand, as absolutely certain that the captured example was constructed and assembled at least to a considerable extent, if not totally, not in the Zeppelin workshops but under licence in the Albatros works. In witness of this one sees the initials A.W. interlaced in a monogram, which I have seen stamped on various parts of the machine and punched on the undercarriage components.

There are besides certain details of the wiring which employ Albatros fittings which have already been described in the account of Albatros machines in previous issues. These same fittings are also found in the ribs of the B.F.W. type C.5.

The captured avion was constructed in July and August, 1917. Its controls carry the date of reception, August 11th, 1917, but it is possible that it has been tuned up, repaired, and even somewhat modified, as the structure of the undercarriage and its inscription "Verstärkt" (re-inforced), as well as various other details, tend to prove.

The Forerunners.

At this point one must protest against the epithet of the "first giant avion" which has been allocated to this machine. When insisting on the origin of the conception of giant aeroplanes and hydro-aeroplanes, the construction of which was tried in France before the war and afterwards in America by Curtiss, let us indicate that Mr. Handley Page has not only foretold the use of giant aeroplanes, but that he has erected them according to a regular system.

Caudron, Caproni, Handley Page and Sikorsky—the last-named with his four motors transversely in line—have among the first realised the giant war machine. Biplanes and even triplanes, the instruments of many exploits of all sorts, and the actual Zeppelins, as well as the Gothas, I repeat, owe much to these machines, notably to the Handley Page, one of the first of which had the bad luck to land at Lille on its way from

England, and also among others to the twin-engined Spad with its screws behind, which was tried in 1916.

The powerful three-engined D.N.F. (Duperron, Niepce, Fetterer) and the twin-engined Bréguet made their trials a long time ago—this is mentioned only to recall the past. Also the Germans have certainly not been ignorant of the tests of Voisin, who, on various occasions, has had different types of multiplanes flying over Paris and its environs, machines with a span almost equal to that of the Zeppelin; with motors very similarly disposed, and ceding nothing to the German monster.

It is then only in the use at the Front, and not in the construction, or even the efficiency of machines only a little larger than the Handley Page, that the Germans have been ahead of us. The Germans give up everything in the search of colossal "effects," and, besides, never neglect a chance of appropriating the ideas and innovations of others. Also the differences in dimensions are less than first accounts supposed, and the qualities of the Zeppelin appear much more mediocre than those which were attributed to it.

An Over-rated Colossus.

As to the realisation itself, as one has previously observed apropos the big twin-engine machines, the Germans have only enlarged the dimensions without venturing into the unknown, or into the original. Their Zeppelin has hardly anything peculiar to itself except its enormousness.

They have not revolutionised or even renovated their general conception of avions. Working on what existed, functioned and had passed its tests already, they have never executed any prodigious step forward, but have, on the contrary, merely effected transitions.

Their twin-engine machines do not disclose any new conception, either national or personal. They have only enlarged proportionally, and, so to speak, photographically, their single-engine machines. The analogy is striking when the same firms construct at the same time single-engine and twin-engine machines. For example, the twin-engine A.E.G. of the 1916 type, still in use, and the single-engine A.E.G. of 1916, have many similar characteristics, as, for instance, the balancing of the ailerons and the rudders on the twin-engine type.

Save for racial innovation, it is in this sense of an evolution, less rapid but surer than a revolution, that one has arrived at the point to which experience has brought constructors in all countries, at least before the present exigencies of war, after they had allowed their imagination to wander in creating all sorts of unprecedented forms.

The four-engine Zeppelin in its turn is only an enlargement of the two-engine. One can almost say "This is a two-engine machine with four engines," for of the two-engine machine it conserves the essential dispositions, including that of the engines, in that they have been content to leave them in the same place, but placed end to end in the same position where the twin-engine machines have only had one. It is simply a question of the possibility of realising more powerful engines; the question of bulk, of dimensions and of resistance of materials, and not an affair of new conception.

It is the limit of the power of the German engines which seems to have forced on them the position of one airscrew in front and one at the back, and this disposition seems to be hardly more than an expedient, rather than a principle, of improving efficiency by the succession of the screws, which has imposed the splitting up of 1,200-h.p. between four separate engines.

Vieux Jeux.

The same single fuselage, contrary to the Caproni and others; the same arrangement of wings, instead of triplanes with less chord; the same position of motors, etc., as in twin-engine machines; and even the undercarriage of these last, which is itself as nearly as possible the same as the single motors but doubled, and the same tail skid is found in the four engine machines.

As to the controls themselves, they do not depart notably from the similarity, for we have in many biplanes ever since the beginning of aviation, even on fuselages as in the Dorand of 1913-1914, seen multiple rudders forming a closed cellule at the extremities, and the Germans themselves actually have in the Hannovraner a biplane tail in which the controls are disposed in a general way like those of the Zeppelin.

Also the German twin-engine machines resemble closely the single-engine and four-engine, so that one can say without pushing the paradox to the extreme that the four-engine machines descend directly from preceding German tractor biplanes of which they conserve the general characteristics and aspect.

Over and above this, on the Zeppelin one perceives that the engineers have sought for simplification and have not adopted either a dihedral or an arrow shape to the wings, nor complicated curves, nor staggering, nor inclination of the struts either in the cabane or in the fuselage, but have kept to horizontal and vertical lines, dimensions in round figures, simple and relatively uniform sections, few special attachments. To sum up, this is a machine of the brute force type, without the refined complications with which many German constructors are pleased.

Reporters' Errors.

Before giving a detailed description of this avion, let us do justice to the errors committed in articles published on this subject. The published accounts give it according to their variances 1.4 ms. to 2 ms. span too much; 15 to 20 sq. ms. excess in surface; 1.5 ms. too little in length; others 6 ms. too much; 3 ms. too little in height, although the interval between the planes has been exaggerated in the middle and decreased at the extremities.

As to the weight published, it exceeded the truth by anything between 1,500 and 2,500 kilogrammes. In short the giant is never so much a giant as in conveying that illusion, which is the more astonishing in that the accounts have decreased the h.p. by 200, and suppose it to be loaded at 14 kilogrammes per h.p.

Everything in the descriptions has been represented upside-down. The arrow shape of the wings, which was attributed to the trailing edge; the centre section which presented a V and an arrow shape wrong way up, quite incomprehensible and unpractical; errors in the gap and chord of the wings; ailerons which were supposed to exist on both planes and obliquely; ribs which had to be oblique, because perpendicular to the leading edge; cabanes doubly unsymmetric in consequence of the erroneous V and arrow; the undercarriage quadruply reversed, the front behind and contrariwise; the struts in a vertical plane in place of logically prolonging the inclination of the A of the cabane; the outside struts unequal and too close together and entirely unlike the inside struts where they are in fact identical; the screws and the motor badly placed—too close together by .5 ms.; the fuselage which the screws would have cut to pieces because it was too large; the elevators 2.15 ms. apart instead of 1 m., and so forth. Apart from such things there was nothing left in the descriptions.

THE GIANT DESCRIBED.

In reality the total height is 6.4 ms. of which 1.5 m. is under the fuselage and 4.4 m. between the wings in the centre section. Total length, 22 ms. Total span, 41 ms.

The Wing Form.

Form.—The span of the lower wings is equal to that of the upper wings and the chord is the same except for a difference of some centimetres in the centre section. There is no stagger. The upper wings have no dihedral, the lower wings only being so provided, and they also only have a dihedral outside the base of the cabanes which carry the engines, but what there is is accentuated. From 4.4 ms. at this point the gap decreases to 3.6 ms. at the tips, or .8 ms. decrease in a little less than 16 ms., or almost 5 centimetres per metre.

The two planes indubitably are arrow-shaped only as to the leading edge, and in a somewhat marked manner. The whole recalls the form of the L.V.G. of 1913-17, and not that of the earliest Morane-Saulniers, of which the L.V.G. was the inverse.

From 4.5 ms. at the axis of the machine and as far as the summits and bases of the engine cabanes, the chord decreases to 3.5 ms. at the tips, or 1 m. of arrow in about 17 ms.—that is to say, about 6 cms. per metre. As to this arrow of the two planes, it is no less certain than as regards the V of the lower wings that it begins only at 110 mms. from the exterior bases of the cabanes and at 100 mm. from the summits. Beyond these points the gap of the wings is then at each point a little greater or a little less than their chord, and the average gap is equal to the average chord.

All these dimensions are, besides, confirmed by the height of the interplane struts as to the dihedral, and by the length of the compression tubes between the spars as to the arrow—that is to say, in plan and front elevation.

The trailing edge of the wings seen in plan is, as distinct from the leading edge, a straight line. The wing tips are slightly oblique and rounded.

Surface.—The carrying surface of the wings is 314.5 sq. m., of which 14.5 sq. ms. is occupied by the two ailerons.

Incidence and Wing Section.—The incidence of the wings from the axis of the machine to the engine cabanes is determined by the two following points. The lower longerons of the fuselage being horizontal in front, the lower side of the front spar of the lower wing rests directly on their upper surface, while the upper side of the rear spar only comes flush with the upper surface of the fuselage longeron. This is to say, the angle of the under surface of the wings between the spars is fixed by the depth of the rear spar—that is to say, about 160 mms.

The incidence is thus approximately 0.45 ms. in the 4.5 ms. of the total chord, or about 1 in 10.

Even if with the idea of simplification, and, contrary to the rule of nearly all German biplanes, the angle of incidence does not diminish from the middle of the machine to its extremities, the difference in level between the leading edge and the trailing edge would decrease progressively in the same direction, since



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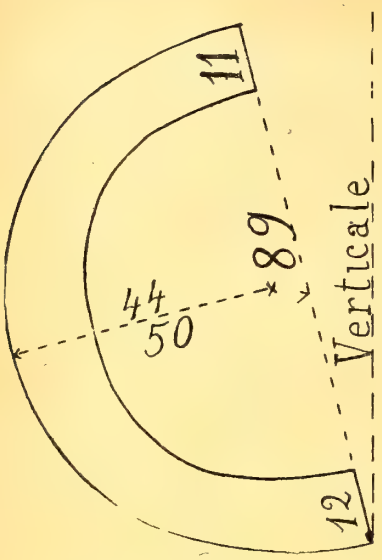


FIG. 1a.

the wings narrow towards the tips. But as it seems certain that the curves of the wings are more accentuated towards the centre of the machine than at 15 ms. from the centre, where I have taken the curve illustrated in Fig. 1, it is possible that the angle of incidence decreases correspondingly with the concavity of the wings.

As to the wing curve (Fig. 1), it recalls on a larger scale those which hitherto have been traditional on German biplanes, and much more nearly that of the wings of the Aviatik, C. type of 1916.

The leading edge is round—that is to say, almost a complete semi-circle. (Fig. 1a.)

Although the curve is more accentuated towards the centre of the machine than where the section has been taken, the curvature is relatively slight for such a machine, and, therefore, the incidence has to be quite considerable.

In spite of the enormous chord of the wing, 4.5 ms., there is no double curvature. The trailing section of the wing is flat below and very slightly convex above for 1.5 m.

The maximum thickness, 0.22 m., is by no means extraordinary, because, on the new small Fokker chaser biplane, it is 0.24 m. on the upper wings.

Wing Structure.

WING SPARS.—There are two principal spars which are true girders, a third spar, the shape of a gutter placed on its side, holds the ribs .75 ms. from their ends. In the upper planes this only runs as far as the beginning of the ailerons. The aileron spar, also of a gutter section, supports the aileron hinge and is placed about a metre from the trailing edge.

Both of the true wing spars cross the fuselage at their different levels. The front spar on top of the lower fuselage longeron to which it is held by eight bolts. The rear spar comes flush with the longerons to each of which it is united by a heavy spar-box of a T shape, which spar-box also serves for the fixing of the rigging cables.

By this continuity across the fuselage it is possible to dispense with special compression tubes, and the position of the leading spar of the wing permits the existence below it of the metal cross-bracing of the fuselage (Sketch E. in general arrangement drawing), while the rear spar itself fulfils the purpose of a similar cross member.

Each of the spars is composed in the course of its length of three pieces, each a straight line. The rear spars are assembled all three in a straight line, but the front spars, outside the engine cabanes, are set back in the arrow shape, and as regards the lower wings, both spars are assembled to give a dihedral.

Thus the centre part of the spars which traverse the fuselage are a single piece in a straight line without either arrow or dihedral as far as the outside of the engine cabanes.

This division into three parts does not cut the spar up too much and proportions the length very well, contrary to what would have happened if the spars had been arrowed right up to the axis of the machine.

Moreover, the straight disposition of the central parts of the wings, which is so simple and natural, and has already been applied to all the twin engine German machines without exception, is evidently necessary to give the under carriage and the engine cabanes a foundation which is neither oblique nor inclined in either direction, without counting the facility of attachment and rigidity of connection of the fuselage.

The two assemblages of the three portions of each spar are arranged in the following way: The two extremities of the neighbouring portions terminate in a rectangular section and are brought together in a powerful collar by strong bolts lying in the direction of the span. They can, therefore, be dismounted in case of need, but this dismounting would be slow and an exceptional business. Moreover, in this machine, except for the tail and the undercarriage, there are no facilities for dissembly as is common in other types of German machines.

The height of the spars are as follows: Front upper spar 143 to 149 mm., front lower spar 140 to 144 mm., rear upper spar 162 to 167 mm., rear lower spar 161 to 155 mm.

These dimensions are maintained to within .6 or .7 ms. of the wing tip. But by a particular and even singular disposition, and one which is worthy of attention, on each side of the interplane struts the width of the spars, and not their height, has been thinned down for almost a third of their length.

This width which is normally as follows: 78 mms. to the upper front spar; 91 mms. to upper rear spar; 62 to the lower front spar and 89 mms. to the lower rear spar, changes quickly from 78 mms. to 72 mms., from 91 mms. to 85 mms., from 62 mms. to 56 mms. and from 89 mms. to 83 mms., for 1.7 ms. of the span in a length of 5.2 ms.

Then, by an equally abrupt reversal, they return to the original dimensions which they maintain for 1.9 ms. of their length in 5.8 ms., returning afterwards to the reduced section for 2 ms. of the length, and afterwards going back to the greater dimension at 1.9 ms. from the external interplane struts.

Towards the extremity, besides this reduction, the section of the spars diminishes progressively for 0.6 to 0.7 ms. in the following manner:—For the upper front spar down to 75 × 75 mms., for the upper rear spar 83 wide × 63 mm. high, for the

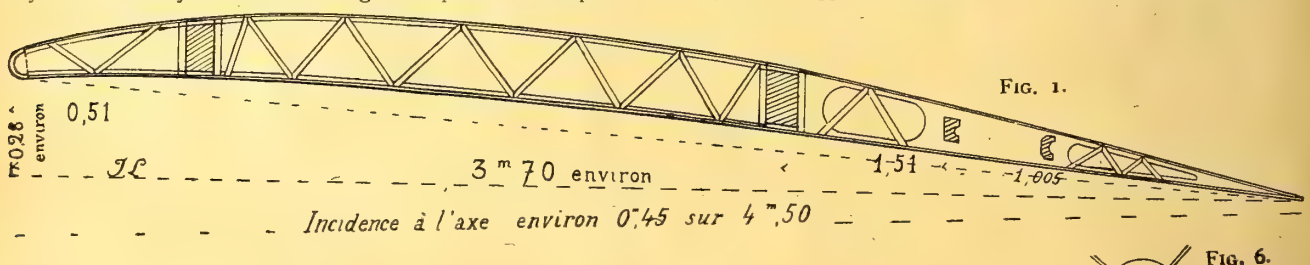


FIG. 1.

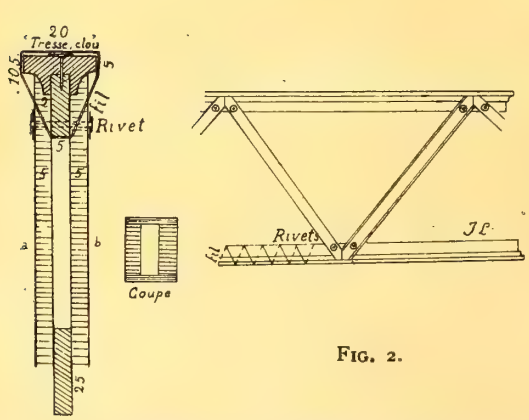


FIG. 2.

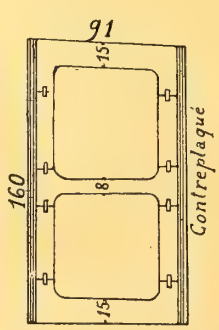


FIG. 3.

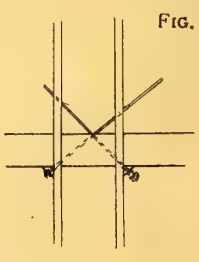


FIG. 4.

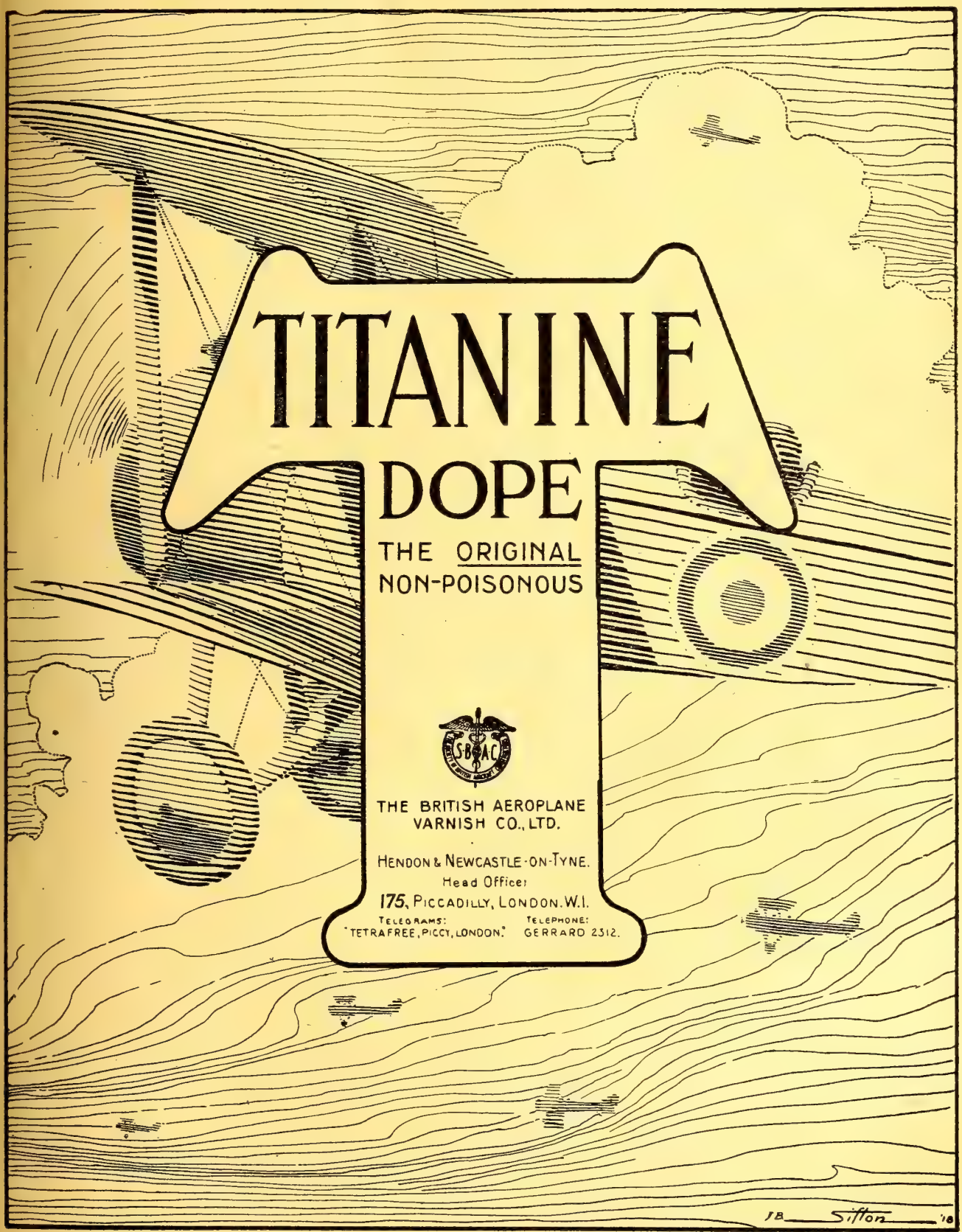
FIG. 6.



FIG. 10.

FIG. 5.

Details of the Zeppelin Four-Engined Biplane, Scale Drawings of which will be found in the Centre Pages of this Issue.


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lower front spar 75 wide × 55 mm. high, for the lower front spar 83 wide × 60 mm. high.

These figures show that the front spars are reduced in both directions, and the rear spars in thickness only. But one must observe that, besides, the front spars are thinned down on their upper side as well as lower side, while the rear spars are only thinned on the lower face, in such a way as to provide a more accented raising of the wing surface towards the extreme rear angle of the lower wings, as well as the upper, in the latter of which this lifting (or wash-out) is prolonged by the aileron.

As may be seen in Fig. 1, each spar forms a double box composed of seven grooved pieces assembled, glued and reinforced on the two sides by one or two layers of ply-wood, then wrapped with fabric in a spiral before placing the ribs in position. At the points of attachment and at the centre they are left solid. The upper spars, as well as being larger, especially the rear spar, are made of ash, and the lower ones of spruce.

The little supplementary spars are of spruce. The leading edge is a semi-circle of spruce.

Ribs.—Outside the central fixed part where they are perpendicular to both edges the ribs form with the leading edge and with the front spar an angle clearly obtuse on the side of the fuselage and acute on the opposite side, while they are perpendicular to the rear spar and trailing edge. The same is true of the compression tubes situated between the bases of the interplane struts.

All measurements confirm the fact that the ribs and the bases of the interplane struts are parallel to the axis of the machine and that the arrow of the wings only exists on the leading edge The construction of the ribs recalls that of the Handley Page, also of certain Albatroses, and specially that of the framework of the Zeppelin airships, as may be seen by comparing the sketches (Fig. 2) with various published pictures of airship construction.

There are top and bottom flanges glued and nailed to a central web, also in spruce, which is bedded into the flange. Webs in the form of double laths unite the opposite flanges, and in the case of those in compression are made into boxes by the addition of three-ply strips (Fig. 3). They are disposed in zig-zags and fixed to the web of the rib by duralumin rivets.

All these wooden elements are glued. The ribs are nailed to the spars. Everything except the ply-wood is made of spruce. The trailing tip of the rib is sheathed in a sort of square thimble of thin brass. The trailing edge of the wing is held by a simple piano wire which goes through this thimble.

The distance between the ribs, which is enormous, varies from .565 m. to .43 m. It is less in the vicinity of the airscrews.

Between two neighbouring ribs a flat lath, 15 by 10 mm., extends to the leading edge above the front spar to maintain the shape of the fabric.

On top of each rib the fabric carries a strip of braid glued outside. It is fixed to the ribs by a thread which passes over this tape and on top of the lot is glued a strip of fabric 3 to 4 cm. in width.

Between the spars two series of bands pass alternatively over and under the ribs of the flanges to which they are nailed, maintaining the position of the ribs laterally. Exactly in the middle between the interplane struts two ordinary ribs are much closer together than the others, being .15 m. apart. They maintain the distance between the longerons against the compression which is exercised by the secondary cross-bracing in the vicinity of these ribs.

Bracing.—The wings have a double system of cross-bracing, one between the bases of the struts, which is very long and consists of thick cables, and the other is in simple 3 mm. piano-wire joined to the ends of the twin ribs which are placed halfway between the struts.

These wires, by a curious disposition in crossing the spars, penetrate through them obliquely, as shown in Fig. 4, and they are connected to a simple nut and bolt arrangement. In the spruce block situated in the exterior angle between the rib and spar they are fixed solely by the pull of the turnbuckle.

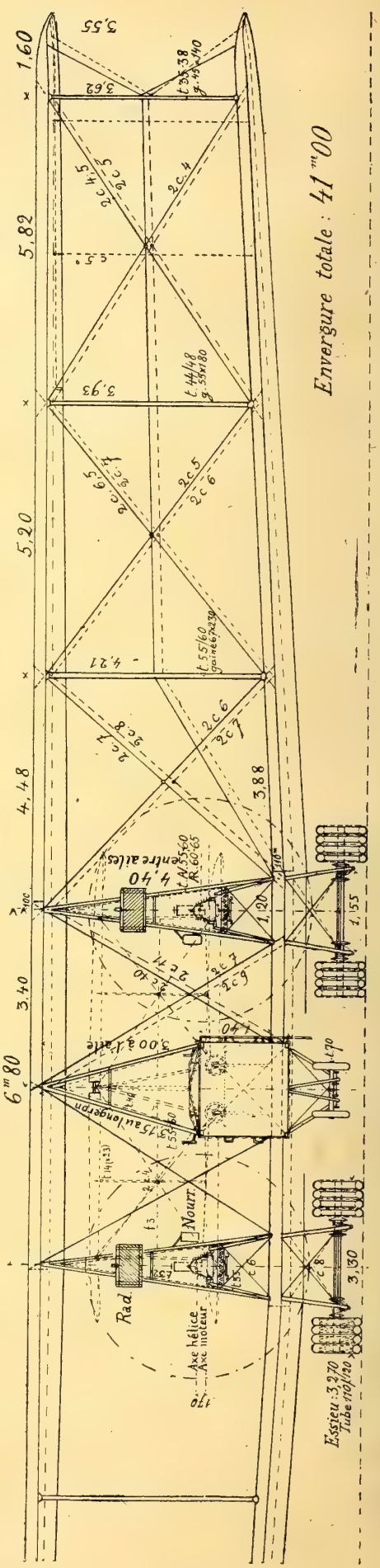
The long cable bracing is fixed to the extremities of the compression tubes. This extremity is fixed to the spar by two lateral lugs, pierced with holes, to which are attached the cables and wires of the cross-bracing.

Compression Tubes.—These are situated between the extremities of the interplane struts, and between the engine cabanes. They serve at the same time to maintain the distance against the incidence bracing. Given that there are two for the base of each cabane, and a single one for the single summit, there are altogether ten in the lower plane, and eight in the upper plane, a number which is frequently surpassed in the small German aeroplanes.

The tubes are round, 50 mms. in diameter, for those at the summit of the cabane, 45 mms. at the base of the cabane and decreasing, as they get away from the centre of the machine, from 40 mms. down to 12 mms. between the external masts.

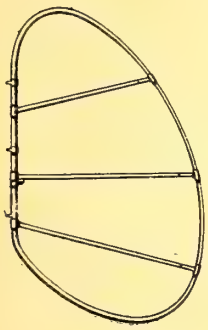
Interplane Bracing.

The whole of the strut and bracing arrangement is clearly



FRONT VIEW OF THE FOUR-ENGINED ZEPPELIN BIPLANE. The right wing is partly cut away so as to make the drawing as large as possible. M. Lagorgette has indicated in a most painstaking manner the sizes of tubes, cables, and fairings, "t" stands for tube, "g" for "gaine" or fairing, "c" for corde or cable. "Nourr," on the side of the starboard engine stands for "nourrice," or "nurse-tank," which we call a "gravity tank." The word "longeron" written along the starboard leg of the fuselage cabane refers to the upper plane spar, and not to the fuselage longeron. The symmetrical arrangement of the engine-cabanes and their continuation to the under-carriage struts is noteworthy. The front elevation of the tail is shown in dotted lines behind the fuselage and engine-cabanes.

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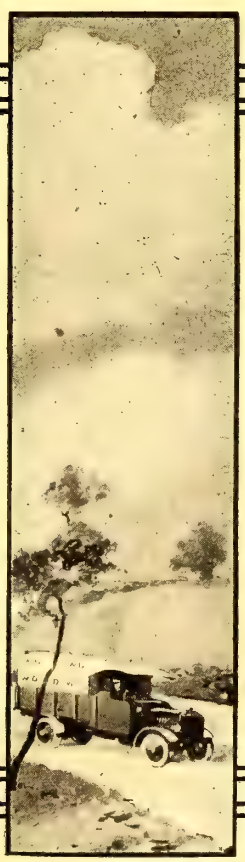
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imitated from the "Bréguet de bombardement" of 1914-16. Besides the central cabane on the fuselage there is on each side a cabane for the engines and three pairs of interplane struts.

Cabanes.—Each of the three cabanes, quite simple and brutal in design, is composed of two A's, of which the bases and summits are fixed by sheaths to the wing spars, or to the fuselage in the case of the base of the central cabane, and they are interconnected by compression tubes inside the wing and bolted to the sheath.

The width of the engine cabane at the base is 1.2 ms., both front and rear, and the distance between the A's longitudinally is 2.48 ms. Each of the A's is of round tube, 55 × 60 ms., except the rear tubes of the engine cabanes, of which internal and external diameter are 60 × 65 mms. The cross-piece is of 32 mm. tube.

Interplane Struts.—These are parallel to one another and vertical; of round steel tube with conical ends stuck inside and welded. They are bolted into lugs on the bottoms of which they press, which lugs are themselves raised on a large steel sheath surrounding the longeron without being imbedded in it. (Fig. 5.)

Their diameter and thickness diminish from the internal pair (55 × 60 mm.) to the intermediate pair (44 × 48), and the external pair (35 × 38 mm.). These dimensions in each pair are the same for the front and rear struts, contrary to what would have seemed natural and to what exists in the legs of the engine cabanes, and for the front and rear cable bracing.

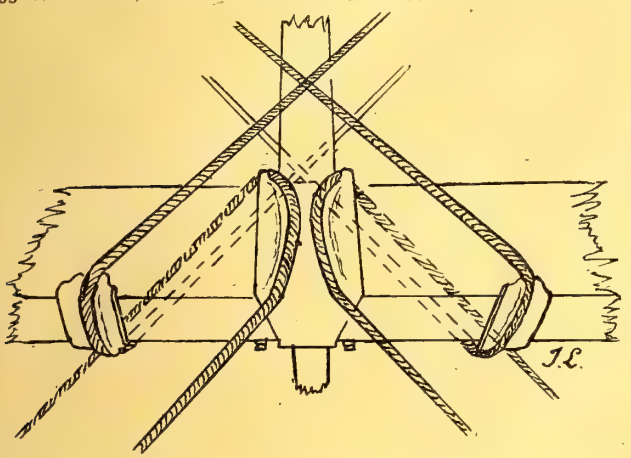


Fig. 7.

They are surrounded by fairings of 3-ply with little interior ribs, as on the Bréguet, open at the top and bottom to enclose all attachments. (Fig. 6.) The dimensions of these fairings vary proportionately to those of the struts.

Bracing.—The cables are disposed in transverse and longitudinal X's. As regards the longitudinal cables, there are two cables from the top of the front strut to the bottom of the rear strut, and one from the top of the rear strut to the bottom of the front strut.

By a disposition peculiar to this machine, and general in the bracing in other directions (except transverse) of its fuselage, each transverse cable of the wings as well as in the stabilising planes is formed of an endless cable. Or, more exactly, after it has been passed diagonally round three faces of the wing spar, without having been linked to a fixed point, but passing simply in a groove or gutter welded on to the sheath of the spar, one of the extremities of the cable returns from the opposite side towards the other extremity with which it is linked by the turnbuckle (Fig. 7). It is thus, in a sort of way, doubled, but although weighing double, it does not offer double strength or double security. (There are 450 ms. of transverse cables between the wings, of which 400 m. operate in the fashion described, and there are about 2 kilometres of cable and wire of various sorts, weighing some hundreds of kilogrammes in the whole machine.)

Undoubtedly this procedure ensures a certain elasticity from which the avion and the cable itself profits, but if a rupture occurs the entire cable ceases to fulfil its functions, because, having no point of attachment, instead of having four, it slacks off and offers no resistance to strain. One can only see in it inconvenience in compensation for very slight and problematic advantages.

An analogous system was applied on the Zeppelin airships in which it was impossible to have absolute rigidity, and if the engineers of this firm have adapted it to avions in the same way as the employment of aluminium, it is undoubtedly because of the psychological influence of tradition not less than for the doubtful technical reason of suppleness.

The ferrules on which these gutters are welded are single for both neighbouring cables.

Instead of being separated by the thickness of the spar for the rest of their distance between the wings, the two parts of the same cable are pulled together by ligatures at a distance of about 4 ms. from their exit from the wing, and up to that point the triangular loop which they form is enclosed in a fairing of hinged aluminium which can be opened.

To avoid distortion of the struts an almost horizontal tube links at mid-height each front strut with the strut behind in the same pair.

Moreover a set of cables of which one extremity is fixed at the intersection of the wing spars with the bases of the engine cabanes runs transversely at half their height from the internal struts to the external struts, and thence terminates .08 or .1ms. from the extremity of the spars, thus linking up by cable the ends of the horizontal steel tubes already mentioned.

At the crossing of these cables with the transverse bracing cables, the cables are enclosed in a little fairing of poplar profiled in the form of a hollow olive. This fitting is also copied from the Bréguet. Over and above this, all the cables, including the double transverse cables, are enveloped in a fairing of light ply wood surrounded by glued fabric.

There is nothing remarkable about the turnbuckles except their proportions.

Ailerons.—As in all German biplanes, except the Albatros, C. type, and the Friedrichshafen, ailerons are only fitted to the upper wings. In spite of the gutter shape form of the third spar it is fairly certain that this would not serve as a hinge fixing; and that no ailerons exist for the lower wings.

The ailerons are rectangular and do not project. The outer angle is rounded, as are the tips of the lower wings, and is slightly raised towards the rear tip, according to the German habit. They are not balanced, contrary to another habit, and this characteristic seems singular when one recalls the effort necessary to manœuvre the machine even if there were two pilots. And what is more strange the elevators are not balanced either, although there is no servo-motor.

The maximum span of the ailerons is 7.16 ms. and chord 1.02 m., measured from the middle of the 60 mms. tube, which acts as a hinge, and which is imbedded up to that point in the gutter-shaped false spar which supports the ailerons.

Their surface is thus 7.25 sq. ms. each, and their total surface 14.25 sq. ms., which is more than the total surface of certain Morane monoplanes.

Their structure is entirely metallic, being made of steel tubes like those of the ailerons and rudders of all German aeroplanes, though the rudders of the Zeppelin itself are of aluminium. The idea in this is doubtless to give enough strength with slight thickness, and to avoid the warping of the wood.

As on the larger number of German biplanes the ailerons are controlled by means of two sheet-steel levers, .4 ms. long in the arm. These levers are lodged in the thickness of the wing in front of the pivot, and are attached by other cables to the lower plane.

The ribs, spaced .5 ms. apart, corresponding to those of the wing, are composed of two steel tubes in an elongated V surrounded at half their length by a little band of sheet steel welded to them which maintains their distance. The two rear extremities, to decrease the thickness, are welded one alongside the other, and not one on top of the other, to the trailing edge of the aileron, which is also of steel tube, 25 by 14 mms. Other tubes of 15 mms. are disposed crosswise as bracing. All these tubes are wrapt with light fabric, on which is stuck that of the ailerons.

The Tail.

Controls.—The tail of the Zeppelin is the least banal part of the machine, on account of its structure, no less than on account of its dimensions. It is remarkable for the turning of its curvature upside-down, and for the large and almost exclusive use of aluminium. Enormous and heavy, each of its planes would have a surface sufficient to build a monoplane, and, as a whole, they would form a small two-seater biplane, or a large single-seater.

Tail Planes.—The tail planes, or longitudinal stabilisers, partly fixed and partly mobile, are biplanes. Not only are they of a surface equal to that of a biplane, but they are a complete biplane in general structure, internal constitution, cabane, struts, bracing, etc. This cellular character permits one to fix the tail at suitable horizontal points on the fuselage, which is flattened and raised and built as high as possible to avoid accidents on landing. The directional controls, or rudders, are included between the altitude controls.

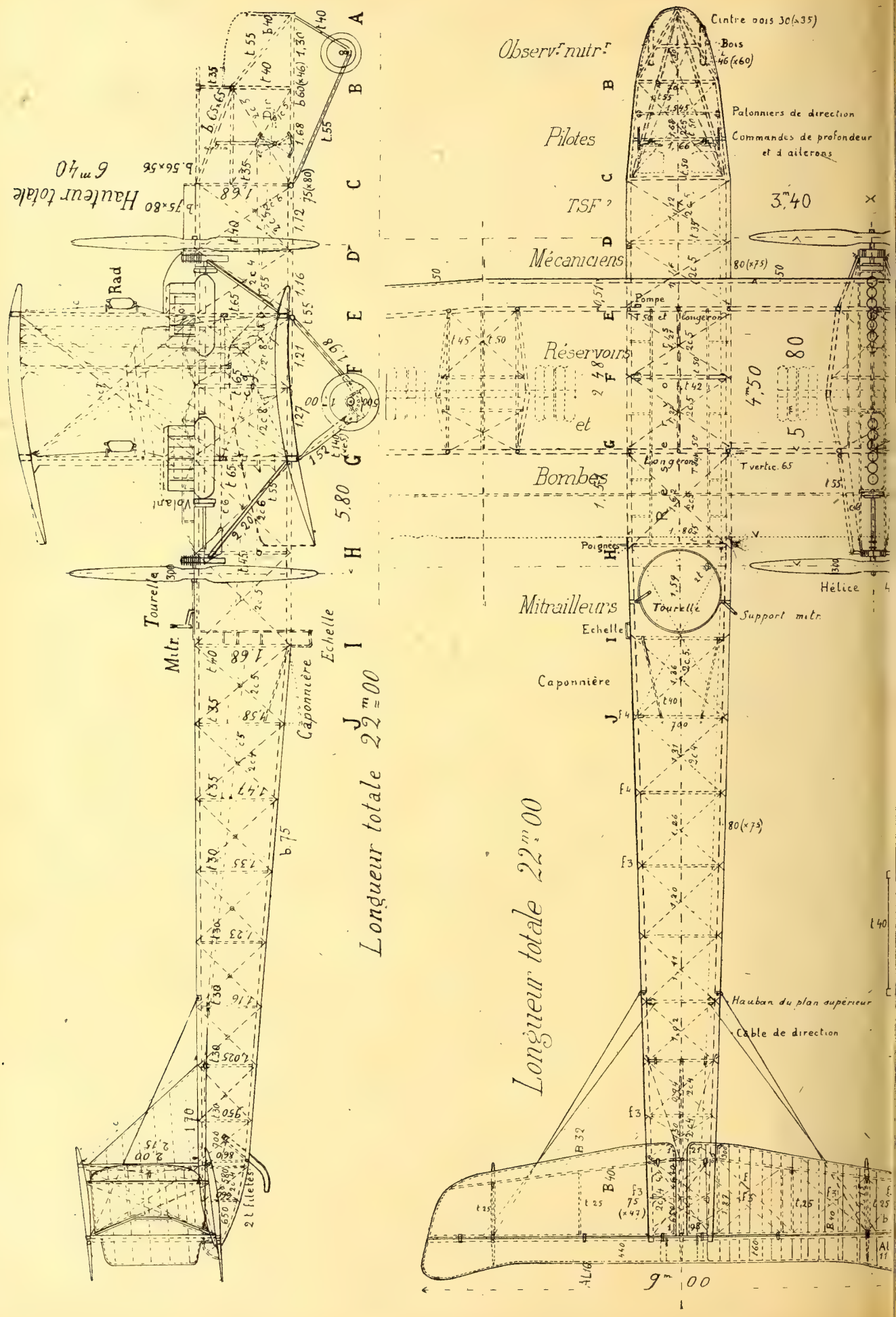
The tail planes are of a rounded arrow shape very much accentuated, and their aspect in plan is exactly that of a Taube. The analogy is striking and complete and cannot remain unnoticed. Thus often in order to innovate something the Germans return to their ancient conceptions.

The tail planes are not staggered.

In spite of the difference in the centre, due to the fact that the lower tail planes are fixed on the sides of the fuselage, they are equal in span (9 ms.) and in chord: 1.6 m. at the centre tapering to 1.5 m. towards the struts, for the fixed tail planes, and .44 ms. to .72 ms. for the mobile flap.

The gap is 2.15 ms. much greater than that of an ordinary biplane, and greater than the chord.

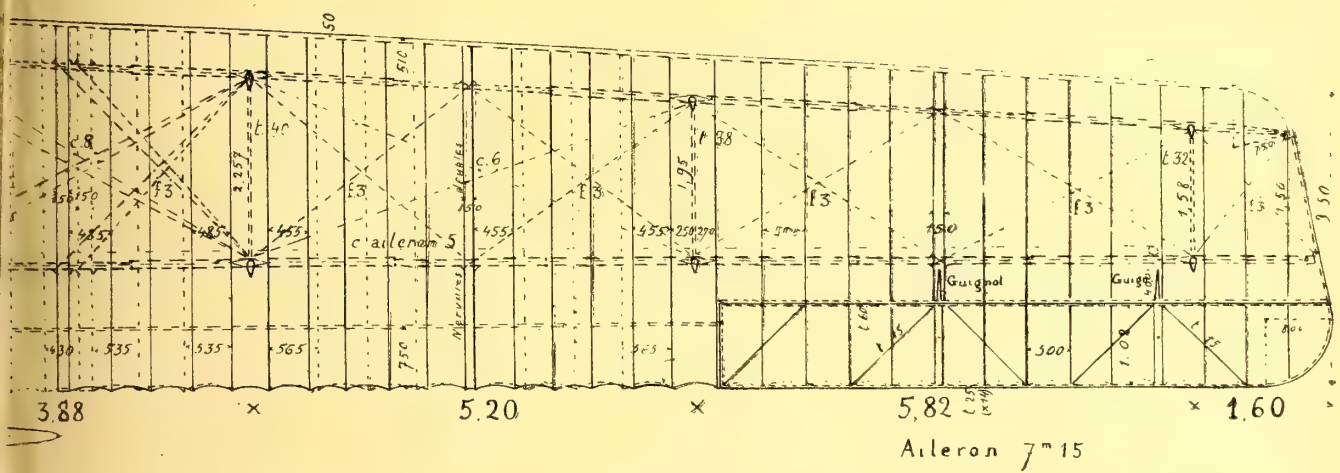
Fixed Portions.—The incidence of the upper surface which is


Observr mitr
Pilotes
T.S.F.
Mécaniciens
Réservoirs
et
Bombes
Mitrailleurs
Caponnière
Centre bois 30(x35)
Bois
Palonniers de direction
Commandes de profondeur
et d ailerons
Pompe
Longeron
Poignées
Tourelle
Support mitr
Hélice
Echelle
Rad
Volant
Mitr
Hauban du plan supérieur
Câble de direction
Longueur totale 22m00
Longueur totale 22m00
9m 00
3m40
4m50
5m80
2 fuselages

THE FOUR-ENGINED ZEPPELIN BIPLANE.

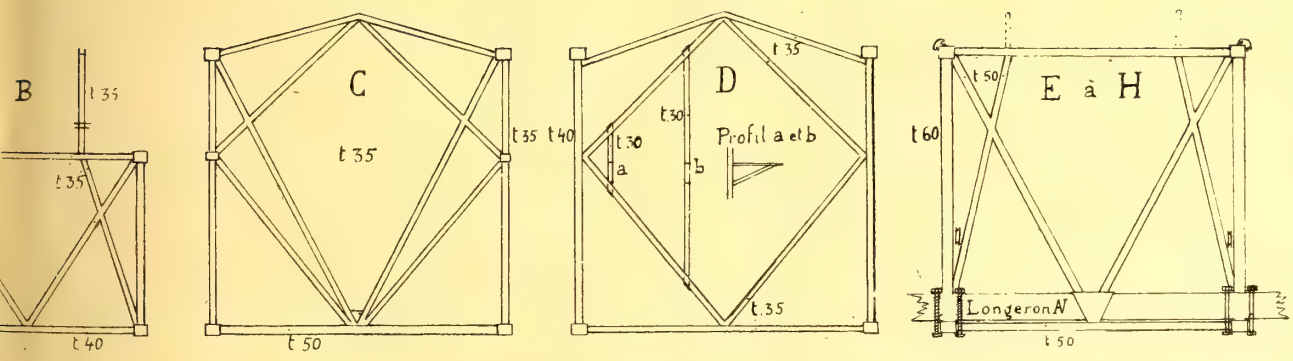
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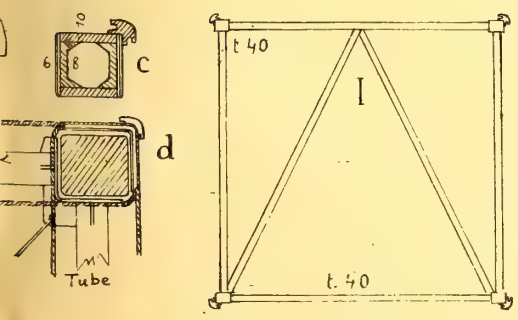
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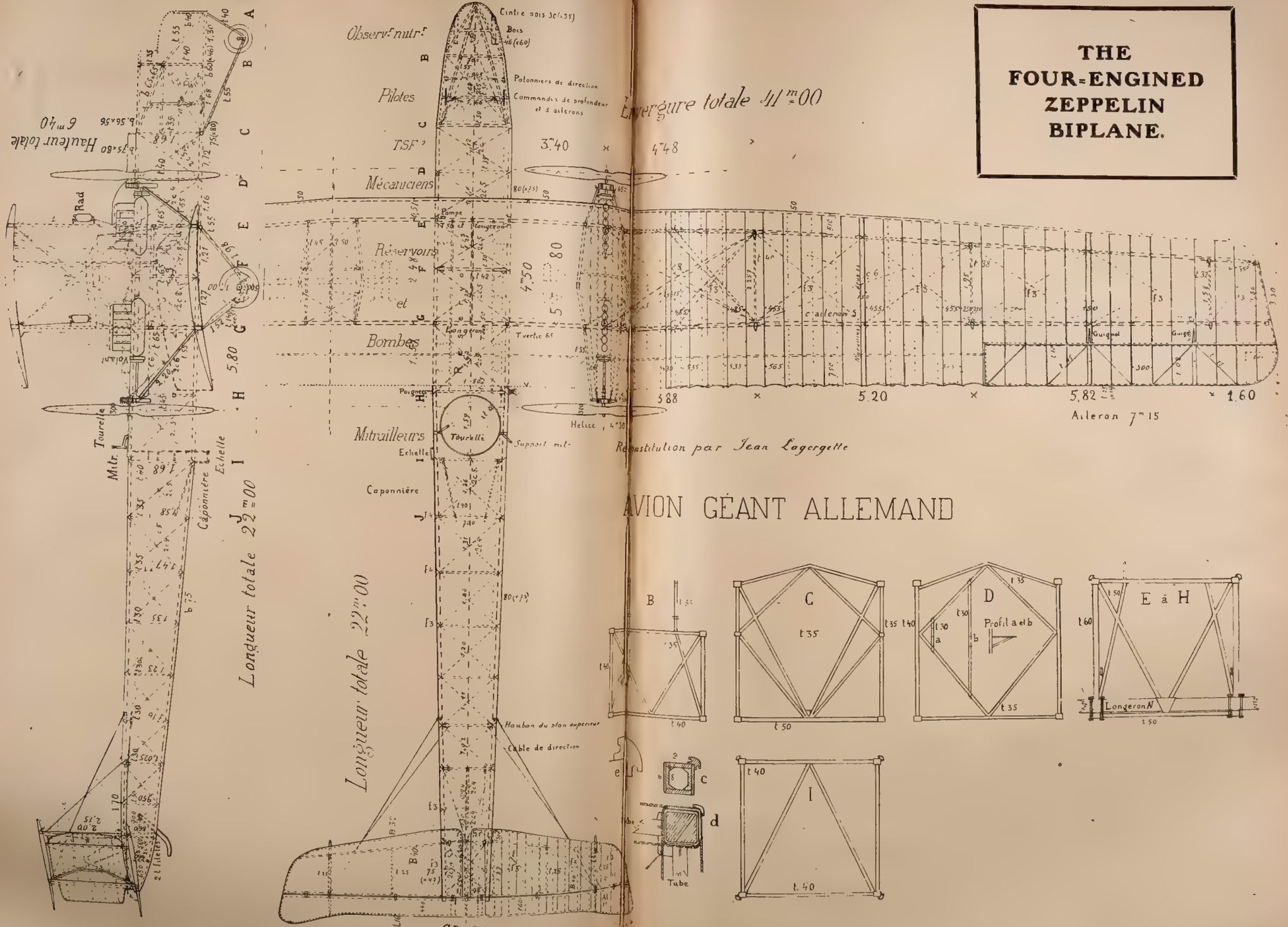
titution par Jean Lagorgette

TION GÉANT ALLEMAND





THE FOUR-ENGINED ZEPPELIN BIPLANE.



adjustable is sufficiently great (.17 ms.) in a chord of 1.57 ms., or about 1 in 10, which is about the same as that of the wings. That of the lower face is still more marked.

This is made necessary by the weight of the tail, but comparison with ordinary planes would necessitate a special examination, for one characteristic which is peculiar and worthy of remark is that the curve of the tail planes, which is very much like that of current types, is completely reversed. That is

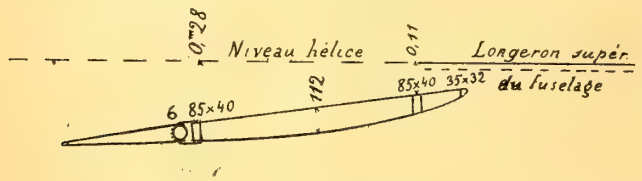


Fig. 8.

to say, the upper surface is absolutely flat, while the lower surface has a curve similar to that of the upper surface of the wings (see Fig. 8). That is to say, it is convex instead of concave to the extent of having 112 ms. thickness.

The section of the elevator flap proper is triangular with a slight curve on both faces.

As regards this singular disposition, is it likely to improve climb? It can hardly do so, and anyhow its climbing must be painful enough, considering that the elevator by an astonishing departure from the rule of most German aeroplanes is not balanced in any way.

Structure.—Each of the two fixed stabilising planes is composed of two parts. The cabane which links them up is composed of two inverted V's with tubular cross-bracing between the summits, and reposes at the rear on the terminal transverse member of the fuselage. At the front it rests on a single transverse piece linked at its extremities to two mountings in slotted steel tubes on which it is adjustable by two ferrules held between two screws. Thus the incidence of the upper plane is fixed in relation to that of the lower plane.

A slight interval separates from the fuselage the two parts of the lower tail plane, .05 ms. on an average. The leading edge is of channelled spruce.

The two spars are of spruce wrapped with fabric, and are 40 mms. wide by 85 high. In each half plane two tubes maintain the distance between the spars against the pull of the cross-bracing.

The ribs are of spruce and of the same type as those of the wings. The width of the ribs is 15 mms.

The struts are of 40 mm. tube with a fairing of and rather similar in structure to those of the wings, but—a new fact—are made of duralumin.

The bracing, also encased in a fairing, is similar to that of the wings. The transverse bracing is double, and surrounds the longeron in the same way. The point at which the bracing-cross is held in a similar way in a wooden streamline "olive."

Two cables link the fuselage near the fifth cross partition to the summit of the rear struts of the tail, and two others link it near the fourth division to the front summit of a cabane. Two pairs of cables hold the cabane longitudinally, besides a pair in the central fin.

Mobile Portions.—To the rear spar is linked by eight hinges the elevator flap, which is a single flap for each plane, although its pivot is composed of two pieces placed end to end on the axis of the machine and bolted together.

The ribs of the moving part are similar in type to those of the wings and the fixed part, but are of duralumin in a U-shape,

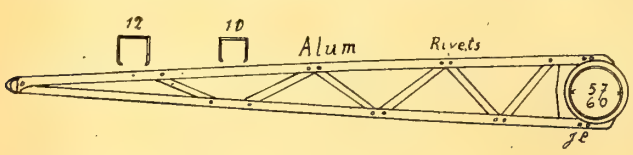


Fig. 9.

slightly closed in to avoid tearing, or wear, by the cross pieces. (Fig. 9.)

The trailing edge consists of an aluminium gutter of a V section, lying on its side, the dimensions being 16 × 16 mms. As in the fin and in the rudders, the ribs and trailing edge of duralumin are wrapped in light fabric in the same way as the hinges, and are pierced with little holes, in which are sewn the fabric of the surfaces.

Rudders.—The rudders, which are three in number, are connected to fixed fins, one of them fixed on the axis of the machine, and the others 3.5 ms. out on each side. They are all entirely comprised inside the level of the two-tail planes, even to the extent of leaving a slight margin of 8 to 10 cms.

The rudders have a similar form, but the central fixed fin differs from the other two. Mounted on a vertical duralumin tube between the front struts of the cabane, this central fin is prolonged as far as the fifth transverse member of the fuselage, in the middle of which it is fixed at its leading point, while the two other fins mounted on the front struts of the tail are only prolonged forward a little way. At the trailing edge all three of the fins are limited partly by the longitudinal bracing to which they are fixed by their duralumin edges. The rudders are mounted on the rear struts or on the vertical tube (which is a shade shorter)—also of duralumin—which is situated between the rear struts of the cabane. In front of these pivots is a balanced portion which extends to the vicinity of the cross-bracing to which the fixed fins also extend from the other direction.

The fixed fins and the rudders are entirely constructed of aluminium. Their ribs consist of little aluminium girders, analogous to those of the elevators and very similar to the girder work of the Zeppelin airships.

Only the actual levers are not in aluminium.

Those of the elevators, of which there are two to each elevator, are in the form of sectors with a radius of .25 ms. and in spite of the large span they are very close together—.56 m.

For the rudders the control cables, after passing over horizontal pulleys near the fifth transverse member of the fuselage, set out obliquely, and one cable passes through a window in each of the external fixed fins to a single transverse lever on the outer rudder. It seems then the more necessary that the three rudders should be linked up so as to be movable in both directions.

Surfaces.—The fixed tail planes have a surface of 20 sq. ms. The elevators have a surface of .5 sq. ms. The outer fixed fins have each a surface of about 2 sq. ms. and the central fin measures at last 1.5 sq. ms., more by reason of its leading triangular part, so that the total surface is about 7.5 sq. ms. for all three.

The three rudders have a total surface of at least 4.2 sq. ms. Of this for each there is 1 sq. m. in the trailing portion and .4 sq. m. for the balanced portion. That is to say, a balance of about a third.

The Monstrous Body.

Fuselage.—As on the smallest aeroplanes, there is a single fuselage. Its general characteristics are those of the old German fuselages built in the form of a lattice girder and not, as in the newer types, as a plywood monocoque as in the chaser machines, or in plywood with wooden frames without bracing. The length is 21.35 metres.

Longerons.—The fuselage, which is of rectangular section, has at each angle a longeron 75 mm. high and 80 mm. wide, which only decreases on nearing the tail, when it is only 47 mm. high and 75 mm. wide.

The two upper longerons are of spruce, the two lower of ash; each of the four is composed of six pieces (assembled as in section "*c*" in the general view of the machine), glued and wrapped with fabric. Where the struts join them they are encased in ferrules, over which the cross-bracing passes.

The two upper longerons are in a horizontal plane on a level with the axis of the air-screws for practically the whole length, and from 1.8 metres, cross measurement, they approach one another progressively in a straight line from the front of the gun-turret to the rear extremity, where the width is 1.08 metres.

The two lower longerons are horizontal from the front of the machine to the back of the gun-turret, whence they rise in a straight line to the last cross-strut but one, and then rise in a curve, so that the fuselage thins down in a horizontal line as in the Albatros and the early Fokkers. Thus, the maximum section of the fuselage, from behind the pilots to the gun-turret, is 1.8 metres wide by 1.68 metres in height, and thence it flattens out progressively.

These dimensions are concerned with the naked woodwork, but on each angle, so as to fix the fabric on the whole surface and to hold it clear of the cables, turnbuckles and ferrules, which might damage it, there has been added a wooden edging which consists of a strip of poplar, 30 by 40 mm., of the section shown in figure "*e*" in the general arrangement drawing. This strip is cut away frequently to allow for the numerous and somewhat thick ferrules and it forms on each side of the fuselage, a projection of 25 mm. or about 50 mm. to be added to the total width and height of the fuselage.

At the extreme end of the fuselage each upper longeron is united to the corresponding lower longeron by a sheet steel clip, whence the extremities open out forwards. The longerons are cut diagonally, and are closed together by another ferrule which also encloses the lower elevator hinge tube.

At 3 metres from the front of the machine, above the leading under-carriage, the longerons are interrupted, and the whole of the front part can, if necessary, be removed. From this point the true upper longerons, which are of ash, 65 × 65 mm. in this vicinity, descend to the summit of two 55 mm. tubes, which come to a point at the leading extremity of the fuselage. The part above these is super-added, and is composed of wood and round light tubing, which is not part of the actual construction.

Partitions.—The upright struts are perpendicular to the upper longerons, and, therefore, for a considerable length also perpendicular to the lower longerons.

The interval between the successive partitions from the point G (general arrangement drawing) decreases towards the rear, as

· Buyers' · Guide.



Glue—

Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Bececolin, Cannon, London." City 1206.

Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Wapp, London." Avenue 3178.

Meudine Co., 8, Arthur Street, E.C. Bank 5873.

Oldroyd, Wm., & Sons, Ltd., 9, Minciag Lane, E.C.3.

Goggles—

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Hack Saw Blades and Machines—

Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880.

Heating and Ventilating—

Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 372 (2 lines).

Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).

Hollow Spars—

McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718.

Instruments—

British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1108.

Instruments (Scientific, Altimeters, etc.)—

The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.

Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17 "Aneroid, Phone, London." Walthamstow 180.

Leather Cloth—

New Pegamoid, Ltd., 134, Queen Victoria Street, London. "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—

The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1. "Vicksmag, Phone, London" Museum 430.

The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.

The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry." Coventry 1008-1009

Metal Manufacturers—

Clifford, Chas., & Sons, Ltd., Birmingham "Clifford, Birmingham." Central 42-43. Avenue 1432.

Metals in General—

Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.

Pritt & Co., 46, Fenchurch Street, London, E.C.3 "Poetry, Fen, London." Avenue 995, 996, and 7996.

Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London" City 6342.

Metal Parts and Fittings—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).

Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4959.

Aircraft Supplies Co., Ltd., Ascol House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).

Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.

Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton 1041.

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).

British Metal (Kingston), Ltd., Kingston-on-Thames.

Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3. Avenue 1432.

Lombard Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).

Metal Parts and Fittings—

Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing. Eusroad, London." Museum 70.

Mountford, Fredk., Lt., Lifford, Birmingham. "Fremo, Birmingham." King's Norton 261.

Rubery Owen & Co., Darlaston, South Staffs.

Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.

The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.

The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston." Bilston 10.

Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—

Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford." Keynsham 21.

Metal Spinnings—

Arnold & Sons, Lawrence Road, Tottenham, N.15.

Metric Bolts—

Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.

Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—

Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.

Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines).

British Metal (Kingston), Ltd., Kingston-on-Thames.

Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.

Herbert Frood Co., Ltd., Chapel-en-le-Frith "Frodobrake, Birmingham." Central 793.

MacLennan, J., & Co., 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—

Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.

Mann, Egerton & Co., Ltd., 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.

Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines)

Nameplates and Labels—

British Metal (Kingston), Ltd., Kingston-on-Thames.

The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Oils—

C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2 "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—

E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London." London Wall 3266-3267.

Pattern Making—

Fredk. Ward, 6, 7 and 8, Allsop Street, Upper Baker Street, W. Padd. 4743.

Piston Rings—

British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.

The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.

Plating, Nickel Silver and Electro Tinning—

Arnold & Sons, Lawrence Road, Tottenham, N.15.

Power Presses and Dies—

Bliss, E. W., & Co., 2a, Pocock Street, Blackfriars Road, London, S.E.1. "Blissdon, London." Hop. 4340.

Presswork—

Rubery Owen & Co., Darlaston, South Staffs.

Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Propellers—

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds" Roundhay 345 (3 lines)

Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.

Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston." Kingston 672

Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104

Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521

Mann, Egerton & Co., Ltd., Norwich "Motors, Norwich" Norwich 482 (4 lines)

Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." 24214 Leeds

Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.

Westland Aircraft, Yeovil. "Aircraft, Yeovil. Yeovil 129

Propeller Cases—

The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—

The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—

Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rigging for Aircraft—

Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466

Screw-driving Machines—

Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Invertors, Redditch." Redditch 74.

Seaplane Manufacturers—

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).

Gosport Aircraft Co., Gosport. "Flight, Gosport" Telephone No. 217.

Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines)

Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627

Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Southampton 1337

Seats for Aeroplanes—

Bowser, E., 50, Park Lane, Leeds. Leeds 21953

Searchlights & Landing Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines)

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Shackles—

British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254

Sheet Metal Pressings—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines)

Arnold & Sons, Lawrence Road, Tottenham, N.15.

Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds "Propellors, Leeds" Roundhay 345

W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham" Central 550

British Metal (Kingston), Ltd., Kingston-on-Thames.

London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.

Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—

The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1 "Flamma, Vic, London" Vic 4830

Arnold & Sons, Lawrence Road, Tottenham, N.15.

British Metal (Kingston), Ltd., Kingston-on-Thames. [Staffs

Rubery Owen & Co., Darlaston, South

The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.

Arthur Hill & Co., Silchester Road, North Kensington, W. Park 1443

Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines)

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"The Aeroplane" Buyers' Guide.—*continue*

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The Small Tool Supply Co., Ltd., Avenue Chambers, Southampton Row, W.C. "Prosait, West-Cent., London." Museum 2695.

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Lodge Sparking Plug Co, Ltd., Rugby. "Igniter, Rugby." Rugby 235.
Ripault, Leo. & Co., Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

Springs—
Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 222.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Stampings—
Arnold & Sons, Lawrence Road, Tottenham, N.15.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3. Avenue 1432.

Steel—
Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 to 3237.
Guthrie, J. B., & Son, 30, St Mary Axe, E.C.3. Avenue 1432.
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well as towards the front. There are two types of partitions. Behind the gun-turret, right to the tail, they are similar to the current type, each being composed of four tubes forming a frame, which, except in partition D (general arrangement drawing) are united at their angles, not directly, but by a square ferrule (sketch "*d*").

Ordinary cross-bracing is used. The extremity of these tubes is crossed by a piece of sheet steel, which is welded to it, and sticks outside with an eye, to which the transverse cross-bracing is fixed.

This cross-bracing is of simple 5 mm. wire in the two partitions behind the cockpit, and of 3 mm. almost everywhere else.

From the bottom of the gun-turret to the front the partitions are entirely of welded tubing, following the various forms of sections B to I, shown on the general arrangement drawing. These partitions correspond to the same letters in the plan and side elevation. All are combined in such a way as to provide a corridor or tunnel inside the whole of this particular "habitation."

The longerons are held in place against the angle of the partitions simply by a ferrule, which is also square but in the opposite direction, which is embedded in them, and which is itself solely subjected to the pull of the cross-bracing fore and aft along the sides, and also by two similar ferrules, but independent, in the horizontal cross-bracing.

In the same transverse partition, vertical and horizontal struts are of the same diameter except in the "habitable" part of the machine, indicated in the sketches B to H (general arrangement drawing), and the fuselage is surmounted by triangular transverse and longitudinal girders, which serve for the suspension of tanks, and maintain the form of the back of the fuselage, which is multi-sided in this part.

It has already been noted that the rear spar of the lower wings serves as a transverse strut at E and G (general arrangement drawing).

CROSS-BRACING.—As differentiated from the transverse cross-bracing, but in the same way as the cable bracing of the wings, the bracing of the four faces of the fuselage is composed of endless cables. These are 4 mm. cables from the tail to just behind the cockpit, and hence 5 mm. for the horizontal bracing and various dimensions for the longitudinal bracing of the sides. The sizes of this side bracing are 5, 5, 6, 8 and 8 mm. between the wing spars, 4 mm. double, two of 5 mm. and two of 6 mm. behind the pilots, and two of 5 mm. with one of 5 mm. alongside the pilots. But while the side bracing cables of two neighbouring partitions touch one another on a single ferrule, the horizontal cables of the upper and lower faces are fixed to a special ferrule as shown in Fig. 7.

On each side of the partitions E and G on the wing spars, and behind partition C (in front there is no horizontal bracing except at the bottom of the fuselage), instead of being endless, each cable is fixed by one of its extremities to a bolt, runs round the opposite longeron and then returns and is fixed to the other extremity of the bolts. These bolts and others, notably those of the assembly of the rear spar of the lower wings, perforate the longerons and spars with numerous holes.

As in the case of the crossing of the cables and wires in the wings and controls those of the fuselage cross-bracing are held by circular aluminium clips pierced with a range of holes to which the piano wires are held by a little metallic thread (Fig. 10). Other attachments are identical with those of the Albatros.

Internal Arrangements.

Right in the nose of the machine, which is rounded and little raised is a place for at least one gunner-observer who is provided with a handle, probably for the bomb-dropping apparatus.

Behind him and somewhat more elevated so that there is a view behind the "habitacle" (a delightful French word for a cockpit), and protected by a transparent windscreen (partition B general arrangement) are installed the two pilots whose controls will be described later.

Behind them there seems to be a wireless operator. Then on a level with the front of the wings are two mechanics who are certainly not too many for the surveillance of the four engines with their various controls, pumps, and so forth.

From the level of the front spar to the trailing edge the multiple tanks are suspended by girths to the girder frames which have already been mentioned, and the bombs are hung under the fuselage.

Between the tanks a passage is arranged through the partitions B to I, from the front to the cabin behind the gun-turret.

Finally, in the turret there are at least two machine-gunners who can fire not only above but under the fuselage from a sort of cabin which is situated behind, and to which they have access by crawling under the partition I.

There are thus a total crew of eight or nine persons. Underneath the gun-turret is a long trap door with the hinges set longitudinally. An external ladder on the left, made of welded tubes, permits the crew to mount into the turret, and another one seems to have been fitted to the front part of the fuselage. The fuselage is covered almost entirely with fabric. The front is three-ply and sundry sheets of aluminium close the roof of the machine towards the front.

The Under-carriages.

In spite of its 18 wheels, the landing system is of the most simple, but not of the most diminished. As on the Friedrichshafen and on the majority of big two-engine machines, it is composed of three parts. One is merely an accessory under the front of the fuselage.

THE FRONT UNDER-CARRIAGE.—This is composed of two widely opened V's, each practically in a longitudinal plane. The after legs, which are 2.6 ms. long, are of 55 mm. tube. They are 1.6 ms. apart and are fixed by bolts under partition C to the lower fuselage longerons at the point where the true longerons are prolonged by false longerons. This entirely detachable part is undoubtedly susceptible to frequent breakage in landing.

The summits of the leading legs, which are short, being 1.1 m. in length, and almost vertical, and made of 40 mm. tube, are joined to the leading extremity of the fuselage by a single bolt in such a fashion that in plan they form a V. The lower ends of these tubes telescope into an elbow of an intermediate diameter, which itself telescopes into a rear tube of 55 mm., the whole being welded together.

Between the elbows of the two V's for a space of about .35 ms. are welded 30 mm. tubes, to which are fixed the rubber shock-absorbers. The two wheels which are .9 ms. apart, have rims of .48 m. diameter by .11 m. wide.

THE MAIN UNDER-CARRIAGE.—This is situated at the level of the motors, under the wings, which particularly, for this reason, have neither a V nor an arrow.

Being subjected always to considerable strains, it is possible that the original under-carriage was miscalculated, which seems

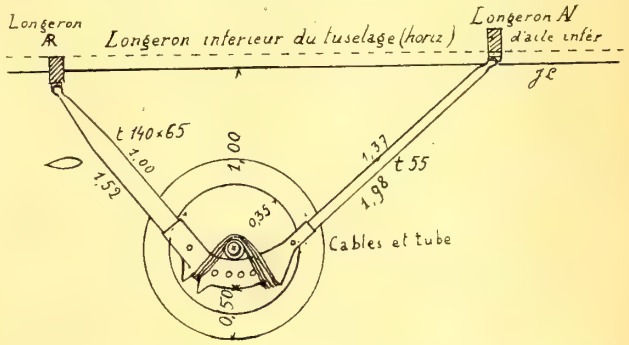


FIG. 10.

to be indicated by the inscription "Verstärkt" ("re-inforced") on each, from which one judges that several modifications have been made in the original arrangements.

Each of them is composed of two longitudinal V's resting under the spars on two 65 mm. bolts, held in a clip which is bolted to another, under the steel sheath which links the engine-cabane to the wing-spar exactly at the level of the foot of the cabane, and not in the prolongation of the leg of the cabane. Thence, where they are 1.2 m. apart, the two V's divide from one another to 1.55 mms. at the base.

The strut, which is 1.98 ms. long and of 55 mm. round tube, and is considerably inclined is the front one, and the other which is 1.52 ms. long, of streamline tube, 140 by 65 mm. (see Fig. 10) is really the after-tube. (Other descriptions seem to have reversed the position.) This tube is composed of two pieces welded to the elbow-piece, and it is provided inside with four longitudinal ribs, of which the welding is apparent on the outside.

The two legs of each V are united by a large hollow steel elbow with rounded angles to avoid cutting the rubber shock-absorbers ("Sandows," as the French call them), and, to hold these sandows, carry a projection in front and two at the back, although this doubling of the projections would seem more natural at the front to hold the rubber cords when the wheels and the axle pull backwards in landing, as the rest of the machine tries to run forward.

The distance between these bases is maintained by an horizontal tube, one in front and one behind the wheel-axle, and by double-bracing of 8 mm. wire. The axle is held in these V's by sandows in the ordinary manner of an under-carriage, between two bobbins made of several pieces of pressed and welded steel.

This axle, enormous, and fatter than those of railway waggons, is of 110 by 120 mm. tube, and carries at each end two pairs of twin wheels. That is to say, eight wheels for each under-carriage.

The rims are 700 mm. diameter by 120 mm. wide. The tyres appear to be about 1,000 mm. (1 metre) in diameter. Each of the cables of the tyres consists of a bundle of about 20 steel wires.

Almost all the pieces of the under-carriage are autogenously welded. The whole thing appears to be strong, but the wheels alone form a cylindrical surface, of which the section is about

2.8 sq. ms., and this must offer considerable resistance to progress.

The Tail Skid.—This is single and of the usual type, pivoted under the middle to a lower fuselage cross-strut. This cross-strut is united to the cross-strut behind it by two tubes in a V and to the cross-strut above it by three tubes forming an A upside down. The points of the V and of the A meet at the pivot. The sandows are fixed to the bar of the A which is itself braced to the upper cross-strut of the partition behind it.

This tail skid is a single piece of ash, 1.2 ms. long, 70 mm. diameter at its upper part, 110 mm. diameter at the pivot and then square with a side of 110 mm. enlarged at the lower end by a steel sole.

Controls.

For transverse and longitudinal control there are two vertical levers of aluminium tubing, plugged with wood at the base only, permanently mounted on a single transverse axle and each furnished with a wheel.

The levers operate in the ordinary manner for longitudinal control. That is to say, they rock backwards and forwards, but they are fixed transversely and the operation of the ailerons is obtained, as in all the old German biplanes, by the wheels which operate cables through pulleys. These aileron cables of 5 mm. pass into the lower wings along the rear spar and thence by pulleys to the ailerons and their two levers.

Each elevator has only two levers, .56 m. apart in a quarter of a circle of .25 m. radius, as against .28 m. radius for those of the control.

The three rudders are controlled by means of two horizontal rudder-bars, and sectors and pulleys guiding the cables along the side of the fuselage as on old L.V.Gs and almost all German aeroplanes.

After passing over a horizontal pulley on a level with the fifth partition from the end of the fuselage, the cables divide out horizontally and very obliquely, traverse the outer fixed fins by an opening in their base and thus to the rudder lever.

Armament.

The armament consists of at least four machine-guns, and possibly six. One at least is placed in front of everything.

A huge gun-turret of 1.4 m. internal diameter is situated behind the wings. It is composed of two tubes of 28 mm., each forming two circles one on top of the other, 30 mm. apart, connected together and fixed to the fuselage.

On each side, a little behind the middle, a gun-mounting is permanently fixed between the turret and the longeron, to which it is clipped by a collar. The gun-mounting is in the form of a "Z," which can turn on itself, and allows the gun to point downwards outside the fuselage without circulating round the turret. These two mountings make it possible to fire over the sides and upwards, as well as towards the rear.

It is possible that other machine-guns have been installed at the back of the turret to fire backwards and upwards; also the compartment behind the turret makes it possible to fire below the fuselage.

There exist, it seems, only two bomb-carriers, but each is for a bomb of 1,000 kilos. (about 1 ton). They are suspended longitudinally under the fuselage between the wing-spars, to which they are fixed by two collars at each end.

Each bomb-carrier is composed of two triangular girders of steel tubes, braced by crossed tubes, all welded together and cross-braced by piano wire.

This frame, measuring 2 m. in height by .35 m. in width, projects above the longerons into the interior of the fuselage. It carries two longitudinal tubes and two transverse arcs, 1.1 meters apart, under which the bombs would be held by a releasable girth.

It goes without saying that such bombs are not suitable for all sorts of objectives, even if their ratio of action compensates for their small number.

Engines.

The four independent engines are placed on the same level, two by two in opposite directions, one being a prolongation of the other with an interval between. Being of the same model they thus turn in opposite directions. The same disposition of engines was tried in France in 1916.

Each of them is held in a rocker between the two legs of a cabane front and rear, half of their length being in front and half behind. Each of their bearers, to which they are bolted direct, is a girder composed of two pieces of ash with a layer of plywood vertically between them.

The whole is held up by a complex wooden frame—uprights of wood and sheet steel 50 mm. wide by 300 mm. high and 450 mm. apart—which on one part butt up against the cabane and on the other part hold up by the intermediary of a cross-strut, the gear-box and the airscrews.

Each cross-strut rests on two tubular sockets of 55 mm., which are adjustable at the base, and rest against the base of the cabane on the wing spar. Cable cross-bracing of a complex nature completes the edifice.

These cabanes are built of two tubular "A's," 55 × 60 mm. in the front, and 60 × 65 mm. on the rear, and not of two "V's," as on the Friedrichshafen. This composition seems quite favourable against smashing, and gives four points of union at the summits of the under-carriage.

Each of the "A's" carries, besides a bracing of 32 mm. under the radiator, a bar of "U" section sheet steel, 100 mm. deep, and .88 to .9 m. in length. At the two extremities of this bar, each front "A" is linked to the rear "A" by two wooden longerons, .9 of a m. apart.

Each base and summit of the cabane is united to the corresponding wing-spar by a clip of 3 mm. sheet steel, 230 mm. wide.

A bonnet of aluminium, at any rate in front, encloses the engines.

These motors are 6-cylinder vertical Maybachs, but their power, which is ordinarily about 250 h.p. in this type, seems to have been forced up to 300 h.p., or 1,200 h.p. in all.

The height of the engine is .85 m. and the length 1.75 m., of which 1.12 is taken up by the 6 cylinders.

It is worthy of note that the German authorities impose on the engine constructors limited dimensions, lengths of base and other characteristics, which permit the interchangeability of different makes of engines.

On the Zeppelin airships of the L.30 series, each of the Maybach motors, of 150 mm. bore and 199 mm. stroke, developed a power of 240 h.p. at 1400 r.p.m.

Two of the motors are provided with a species of gear, almost destroyed, probably a starting-gear.

Airscrew Gearing.—Instead of the airscrew being mounted directly on the shaft, the following arrangement is interposed:—

1. A fly-wheel of cast iron of .4 metres diameter, unlike anything which exists in any other German aeroplane.
2. A connection in aluminium with plates of leather in notches, .36 metres diameter, of which the female part is half engaged in the fly-wheel.
3. A transmission tube, very short indeed for the front engines but .75 metres long in the rear engines.
4. A gear-box containing two toothed pinions in an almuinium case, made in two parts and bolted together horizontally.

By this gearing the axis of the air screw is placed 170 mm. above the axis of the motors, and its level corresponds thus with the upper longeron of the fuselage.

Under this one finds an oil reservoir-radiator, semi-cylindrical in shape, .35 by .1 m. thick, with 20 mm. tubes running through it. This has a pump at the base and two electric thermometers.

Airscrews.

The axes of the airscrews are 6.8 metres apart, laterally, and the bosses of the screws are 5.8 m. apart fore and aft. The screws are two-bladed, of 4.3 metres diameter, as against 5.4 ms. in those of similar types in the Zeppelins of the L.30 series.

From .185 m. towards the boss the thickness changes quickly to .3 m. The maximum width of the blade is .4 m. There are about a dozen laminations, mostly in badly chosen spruce with knots in it, except one which is in mahogany, and the whole length is covered by a thin layer of plywood.

Accessories.

As we have seen, the tanks are suspended to the upper part of the fuselage level with the wings. By each motor there is a gravity tank suspended by two little tubes to the inside leg at the bottom of the cabane at a level with the cylinders. A pump is placed in the fuselage on a level with the front wing spar.

The radiators, of N.I.G. type, and .2 m. thick, .4 m. high and .85 m. wide. Of this width .23 m. consists of a supplementary section, which can be added or taken away as required. The radiators are placed in front and at the top of each "A" of the cabane. They are suspended by two vertical cables.

Electric lighting is installed. Six fire extinguishers were found among the wreckage.

All the fabric is of poor quality, and is camouflaged with dark coloured hexagons, dark blue or violet, on which the black cross does not stand out. The paint used offers little resistance to oil and petrol.

If one reckons on a total weight of 12,600 kilograms, the upper spars of ash must work at a pretty high stress. The most fatigued part, situated immediately outside the engine cabanes, works at 1.7 kilograms per sq. mm. On the same reckoning the spars on the lower plane work at 1.3 kilograms per sq. mm.

The figures for the work of the interplane struts of steel tubes vary from 1.1 kilos to 3.8 kilos per square mm.

Some of the cables vary from 10 kilos. to 25 kilos. per square mm. The cables are flexible and of quite good quality.

If the weight is 12,600 kilograms, the surface 314 square metres and the horse power 1,200 the load would be 40 kilograms per square metre—which is not enormous—and 10.5 kilos per horse power.

It seems unlikely that the speed of this machine is more than 120-125 kilometres per hour.

As to the general appreciation of the Zeppelin. It is permissible for anybody who sees it to formulate their appreciation according to their fancy or their humour, but anyone who tries to present a study of the machine without prejudice owes it to his reader to suspend, as to its flying qualities, any judgment which does not draw its elements from personal observation, or from that of competent and conscientious persons.

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COMMERCIAL AERONAUTICS

THE GREAT SURVEY.

BY "MEDWAY."

It has often been suggested that one of the most important duties to which the aeroplane will presently be put will be the conduct of great surveys of remote districts with a view to an examination of the possibilities of development and the natural difficulties which would be encountered in any project for the construction of roads or railways. This is not, however, the type of survey which I am suggesting at the moment.

It seems to me that one of the great dangers of misdirected development that we have to face results simply from the fact that the great majority of us know quite a lot about some one comparatively small part of the world and very little or nothing about the rest of it.

Anyone who lives in London can see the possibilities of a regular aerial service between London and Paris or a system of services linking up all the more civilised capitals of Europe. Probably business men, who are always fighting against time, can appreciate the beauties of an aerial mail service. Contractors can realise the advantage that it would be to them to be able to have their men upon the spot almost anywhere within two or three days of first hearing that some big work is in contemplation.

The Unknown Countries.

On the other hand, the great part of the world does not count time in minutes as we do. It is compelled rather, through lack of communications, to count it in days or even in months. There are huge tracts of valuable country about which we in Great Britain know absolutely nothing, and about which, for that matter, the few people who live within range of them know very little more.

We who estimate the population of towns by the hundreds of thousands or the million are inclined to forget the existence of innumerable little communities which are only little because they are so difficult to reach. Make them accessible and they will soon become large and prosperous. These are the places we ought to tap, particularly if they lie within the British Empire.

If a man owns a piece of land that is at present only worth £5,000 and by spending £50,000 on a railway or road and on other forms of development he can make his property worth a quarter of a million, then only lack of enterprise or lack of capital will hold him back. We need go no further than our own coast-line to find examples in which people have spent money to increase the value of their land, and have done extremely well out of the speculation.

A Sprat to Catch a Whale.

Now is the time for the British Empire as a whole to organise a similar form of enterprise. Suppose that the necessary aerial services were to represent a direct loss to the community of five millions a year, but that the developments resulting from the creation of those services increased the value of the British Empire by hundreds of millions a year, then we should be fools not to establish the services.

Doubtless we ARE fools, but we need not be pessimistic enough to decide in advance that we have no glimmerings of sense.

A Pilot's Job.

The great survey to which I refer should be conducted mainly by aeroplanes. The pilots should be men of some business acumen. The job of each would be to cover a certain district, large in extent, but probably sparsely populated, and to lay out for that district a scheme of aerial communications calculated to develop it to the best advantage.

When complete, the results of all these local surveys should be co-ordinated and the various proposed networks linked up. Probably even before the survey started a certain number of sensible men with a good map and fairly open minds could plot out a number of provisional main routes which the local surveyors would be instructed to embody in their schemes so far as possible, subject only to important modifications suggested by facts ascertained upon the spot.

The Demobilisation Period.

The great survey completed, the next step should be to inaugurate the services, not piecemeal but wholesale, and to keep them all running for an experimental period of, say, three years. This step should be contemporary with the period of demobilisation which must follow the war. In effect, the whole R.A.F. would be kept in commission, but mainly on a civilian basis.

The machines and the men so employed would form the great reserve of our military flying services, as distinct from the permanent establishment maintained in this country.

At the end of the two or three years, the whole scheme would be reviewed. Certain services would be cut out as permanently unproductive and not likely to lead to the developments originally anticipated. Other new services, not previously planned but now suggested by experience, would be introduced. Others would be supplemented, and others again would be reduced.

Getting a Start.

Supposing that the whole thing proved a gigantic failure, the cost would only be comparable with running the war for an extra week or so. Supposing, on the other hand, it proved successful, as it would do, we should have got an immense start over all competitors.

We should be on a fair way towards getting the aerial communications of the world under British control. We should have an almost infinite training ground for our military pilots of the future, and an almost infinite increase in the wealth and wealth-producing capacity of the British Empire.

Admittedly the whole thing is a speculation, but it is a speculation which any private landowner who could possibly raise the money would certainly think worth his while. What one man can do in his own little way with a few thousands can be done in millions by a population running into hundreds of millions.

False Economy.

Do not let us be content with trifling tentative experiments. Let us go into this thing properly and broadly and nationalise, or rather Imperialise, our system of aerial services from the first.

If we had railways or roads presented to us free of charge in all parts of the Empire, we should certainly see what could be made of them before we definitely decided to refuse to use them. Here we have roads running everywhere through the air and suited for a form of traffic infinitely faster than any that can crawl along the ground.

Are we then to ignore the potentialities of this great possession because in some details our experiments may lead to loss of money? In point of fact we should find that the gains on the swings balanced the losses on the roundabouts, or vice versa.

Broadly, there are two ways of tackling the situation. One is not to start an aerial service anywhere until we are convinced it will pay; the other is to start aerial services everywhere upon a comprehensive and organised scheme and then, after a trial, to cut out those that are no good to us.

The question is whether we have anybody who possesses both the necessary authority and the necessary pluck to take up a proposition so huge but withal so straightforward as that outlined.

MR. HANDLEY PAGE ON "AFTER THE WAR."

Mr. Handley Page, speaking at a meeting on August 7th on "After the War Flying," said that upon the declaration of peace it would be possible to commence an air service between London and Marseilles, with a single stop at Paris for an overhaul and the taking in of petrol. The coming of peace would find tremendous facilities existing for the manufacture of aeroplanes, and an outlet must be found for these vast organisations which had been brought together at great expense. Examining the advantages which would attend the use of the aeroplane by the Post Office, he said that before the war the actual transit of mails from London to Constantinople took 72 hours. By air the same journey could be effected in 20 hours. Rome could be reached in 12½ hours instead of 42 hours. Marseilles in eight hours instead of 23 hours. He was convinced that such a service could be run at a profit, both for mails and passengers, at a rate but little in excess of that which was at present in force. He based his calculations on the use of a medium-sized machine making non-stop flights of 400 miles. Each would be provided with two 300 horse-power engines, and would carry 4,400 lb. of revenue earning load, in addition to the pilot, mechanic, and petrol necessary for a five-hour flight. There would be first-class aerodromes at each end of the route, and another in the middle, completely equipped for overhauling and repairing machines. Second-class aerodromes, with necessary equipment, would be provided every 100 miles, these latter corresponding to the ordinary stations of a railway. He provided for 24 machines running a minimum service of six machines each way per day. Such a service could be provided for a capital of under £500,000 The annual cost would be under £600,000. The cost per ton

mile would work out at 20½d., and the cost per passenger mile to 1.36d. It would be necessary that merchandise should be carried with passengers, if the passenger rate were to be kept down. At the cost of ordinary first-class travelling, every part of the globe would become available to the traveller by aeroplane. America would become within reach in a day and a half, and to aviators, America was no more distant than Manchester was at the end of the Eighteenth Century. The time would come when an Englishman in New York would see his London paper the morning after its publication, and the same thing would apply to the whole continent of Europe. He agreed that reliability would be everything.

Sir Joseph Ward said that he had decided, as Postmaster-General of New Zealand, to introduce aeroplanes in New Zealand to carry the mails from one end of the country to the other as soon as the war was over.

As an indication of the degree of stability now attained with some of our aeroplanes, the following test has been recently carried out: A pilot climbed to a sufficient height, and then stopped his engine, and took his hands off the controls, merely keeping his feet on the rudder bar. He steered for an aerodrome 20 miles away, and except for keeping her straight he let the aeroplane do what she liked. She travelled the whole 20 miles as steadily as a bicycle coasting down a long, straight, and gentle hill. Of course, the pilot had to take hold of the control-stick to land the machine in the aerodrome, but except for that and the steering the aeroplane made the whole journey by herself. If a pilot gets into difficulties when "stunting" a stable aeroplane, all he has to do is to stop the engine and leave the machine to itself. Whatever her position may be at the time, she will quickly right herself and begin to glide. A very stable machine is not quick at manœuvring, nor is it very speedy.

ITALIAN AERIAL POSTS.

The "Times" correspondent at Rome writes on Aug. 5th:—

Plans have been worked out for an aerial service between Nice, Rome, and Brindisi in connection with the projected London-Paris-Nice service, and in future extension to Brindisi and Salonika.

THE AEROPLANE'S Italian correspondent writes:—"It is announced to the Press that in accordance with the decisions of the recent Conference at Paris the terms of a commercial treaty to regulate the aerial post between this country and France have been drawn up, and will be signed this month. Hence, the regular postal service may be started without any red-tape delay. It is not stated between which parts of the two countries the post will be carried, nor whether it is to be a coastal or overland route."—T. S. H.

HOME-GROWN FUEL.

The question of the production of fuel oil from home sources has been investigated by a Committee appointed by the Minister of Munitions, and under the Chairmanship of the Marquess of Crewe. The report, just issued, states that the best method is the carbonisation of cannel coal in existing vertical retorts at gas works, although no very largely increased quantity of oil can be obtained from this source during the war owing to difficulties of labour, coal transport, etc.

The Petroleum Research Department had recommended the erection of batteries of a form of low temperature retort for the carbonisation of cannel coal, but an experimental investigation of low temperature processes by the Ministry has proved that the suggestion was impracticable, on the grounds of expense, shortage of labour, time involved, and the fact that the mineral is not available in the quantities which the first investigations indicated.

The Committee indicates other sources of supply as available in the future. These sources include boring for oil in Great Britain, the further development of the Scottish shale oil industry, and the increased carbonisation of raw coal. In this latter connection the report states that some 1¼ million tons of fuel oil might be obtained from every 20 million tons of coal carbonised.

MOTOR INSTRUCTION.

In the absence of authoritative statistics it would be difficult to say whether the Royal Air Force possesses more aeroplanes than motor road vehicles, or the contrary. But, in any event, mechanical transport constitutes an enormously important part of the equipment of the Royal Air Force, and, for that matter, of any Flying Service.

Equipment officers and mechanics in the making are, therefore, obliged to study very closely the construction, working and repair of road motors, large and small, and of their various ancillary attachments.

The scope for knowledge in this branch of mechanical science is beyond dispute, and, despite the efforts which have been made in the past few years towards standardisation, practically every make of car upon the road constitutes a separate study. Numerous efforts have been made both in this country and abroad to involve a really comprehensive *vade mecum* of automobile engineering. Among the most successful of these volumes may be classed "Dyke's Automobile and Gasoline Engine Encyclopædia," the seventh revised edition of which is now upon the market. This encyclopædia is, as its title suggests, an American production, and is handled in this country by S. G. Gillam, of Richmond, Surrey. Although concerned principally with American cars, it covers so wide a ground that there will be found few details of British practice which are not touched upon. The 515 illustrations which it contains are well drawn, and clearly illustrate the features which they portray.

Section by section, the whole structure of a motor-car is analysed, showing the various alternate arrangements of units which may be adopted. Thus every different type of engine, carburettor, magneto, clutch and gear-box is separately explained, with appropriate sectional views, and nothing at all is left to the imagination. In the elaborate description of the assembly of the different units, illustrated directions are given as to the maintenance and repair of every part of a car, from the engine bodily to the ball-races in the differential.

So wide is the scope of the book that it enters into such side issues as soldering, oxy-acetylene welding, vulcanising and coach-painting, subjects which the average compiler would ignore.

Of more direct interest to those engaged in aircraft construction is a small supplement treating of aero-engines and of mechanical flight. However, as an automobile compendium, the volume is of greater value, and, apart from the aircraft interest altogether, is very well worth the price charged, namely, one guinea. Copies can be obtained from the Aeroplane and General Publishing Co., Ltd., Rolls House, Bream's Buildings, E.C.4, price £1 1s. 9d., post free.

A CASE FOR A FIRING PARTY.

At Tottenham Police Court on August 1st William Benjamin Smith, of Tottenham, and James Harding, of Enfield, were summoned by the Ministry of Munitions for committing certain acts likely to endanger any person using an aeroplane. They were also summoned for doing certain acts calculated to deceive their employers as to the quality of certain material.

It was stated that Harding held a square while Smith drilled a hole in an aeroplane spar. The hole was a quarter of an inch out. After discovering their error the defendants stuffed the hole with a plug, and made another hole in the right place. The effect was to reduce the strength of the spar. A Government inspector who detected the mistake asked Smith if he would like to ride on a flying machine containing such a spar, and Smith replied that he would not.

Mr. Rowland Chessum, the proprietor of the factory, said he had repeatedly impressed on his workers the need of exactitude.

The defence was that the men did not realise that plugging was forbidden on aeroplane work. Smith admitted that it was he, and not Harding, who drilled the hole. Harding only sighted for him.

The defendants were fined £10 4s. each on the first summons, and the second summons was dismissed.

[The defendants may congratulate themselves on having got off so extraordinarily lightly. In any properly governed country they would have been shot, or given penal servitude for life.—Ed.]

STEEL TUBE ENTERPRISE.

Accles and Pollock, Ltd., of Oldbury, Birmingham, who from the very earliest days of aviation have made a special study of steel tubes for aircraft, have issued a new catalogue showing nearly three hundred special sections of aircraft tubing, and reproducing also photographs of special jobs in tube work performed by the firm.

Accles and Pollock make a speciality of aeroplane parts involving steel work, such as complete rudders and fins, control levers of what is generally called the Bloater type, gun-mountings, exhaust pipes, etc., and they recommend aircraft constructors to send inquiries before going to the expense of making special tools for work of this nature. They are also willing to undertake any class of tube manipulation, including trapping and welding, tapering and bending.

The catalogue also includes some very interesting tables showing the various physical properties of tubes.

The management will be pleased to send a copy of this catalogue to any responsible official in an aircraft works.

ASCOL EXTENSIONS.

Mr. G. H. Mansfield, managing director of the Aircraft Supplies Co., Ltd., Ascol House, 125, Long Acre, W.C.2, has been able to open offices in Manchester at 94, Market Street, the telephone number being Central 37, and the telegraphic address "Upcast, Manchester."

For some time past the Aircraft Supplies Co., Ltd., has been represented indirectly in the Manchester district, but it has been felt desirable definitely to open a branch in that city.

The new office will be in charge of Mr. A. Goad, a salesman from Ascol House. He will work in conjunction with Mr. De Grey Firth, the Leeds representative.

As before stocks will be centralised in London, but full arrangements have been made for immediate dispatch on receipt of orders by telephone or telegraph. The Aircraft Supplies Co., Ltd., is well represented throughout the country, and any aircraft manufacturer who does not know the address of the nearest representative would do well to communicate with the head office.

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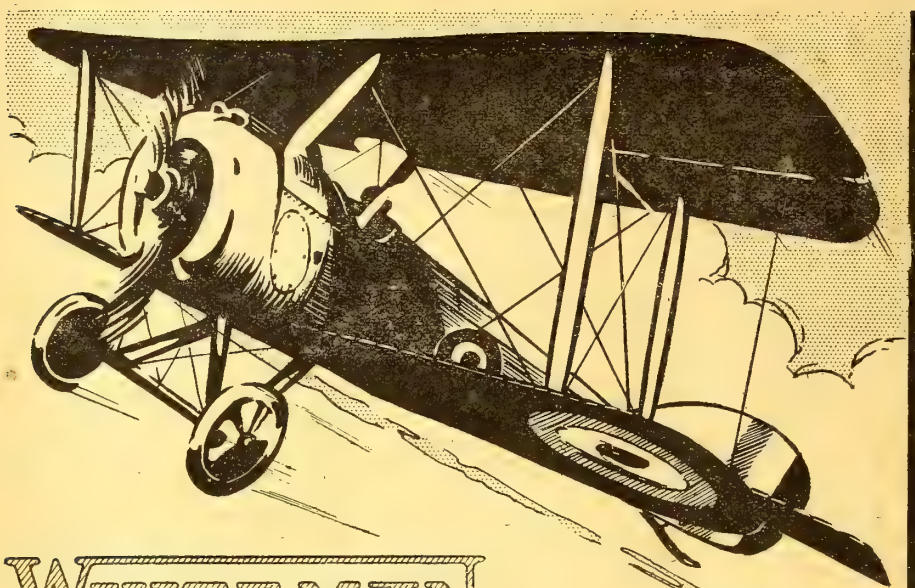
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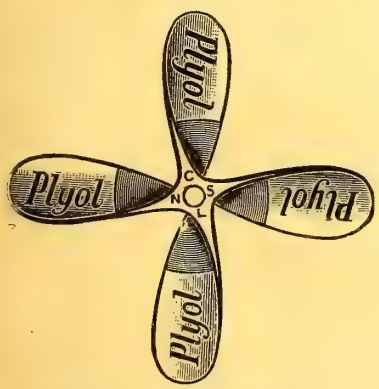
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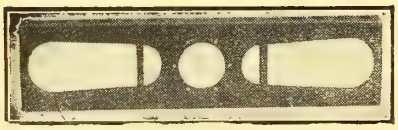
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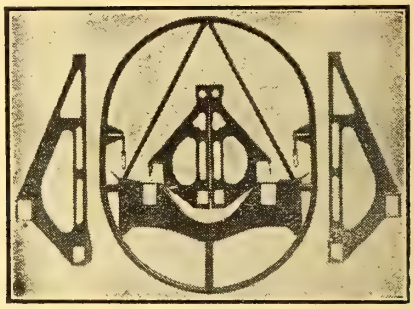
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CURRENT TOPICS.

THE DOPE.

Locking the stable door after the horse has disappeared is, of course, an absurdity, but, nevertheless, one demands that the results of the Investigation Committee in the cellulose affair must be fruitful. In the national interests it is imperative that the inquiry should be thorough and exhaustive; the public must know everything, no matter who is implicated; the case merits it financially and morally. Even the tame inquiry of the National Expenditure Committee proves this.

Estimates of British Firms.

At the outset it must be understood that a practical estimate for the production of cellulose approximated anything between £60,000 and £150,000 according to the quantity needed. Important British firms of good standing were responsible for these figures, and incidentally it should be noted in this connection that one of the firms had been producing the ingredients for years. Being conversant with the business these firms expressed their willingness to provide the necessary output as speedily as the erection of the requisite plant, etc., etc. would allow. Primarily it was a question of business, and secondarily, we suppose, of patriotism; they were only human.

Promise and Performance.

But what chance had they against a Swiss who promised to fulfil the pressing needs within a fortnight or two months? A promise is a promise; in the business world it is virtually a contract; and so on this statement, apparently, the British Cellulose Co. secured the business. Perhaps those who fixed up the contract were not to be blamed in the exceptional circumstances, but although the promises were made in November, 1915, and in July, 1916, it was not until July, 1917, that the company was producing in any quantity. According to the report most of the technical experts were even then much dissatisfied with the result. It is said, too, that the product was made from ingredients provided by one of the British firms which had unsuccessfully tried to obtain the contract.

In such circumstances it is not to be wondered at that many people feel justified in describing the "dope" business as a great scandal. Admittedly, under the stress of necessity, it was essential to accept the earliest executed contract, provided that the promised product was up to standard requirements. That is business; but when the contract time is not kept and the technical experts question the product, it was high time that something was done. In an ordinary everyday business transaction it would have been done immediately and drastically.

Financial Magic.

Nor is the financial side of the business any less illuminating. Indeed the details that have transpired reveal some manipulation of capital that would make even the most successful of the company-promoting fraternity, past and present, turn white with envy. Naturally enough the company started in March, 1916, in a small way with a very nominal capitalisation; it was, in fact, only £4,000 in shares of 6d. each. It is a common practice to form a syndicate of such moderate dimensions as to capital and immoderate pretentions as to ultimate results.

Millions in the Making.

Anyway in March, 1918, the British Cellulose and Chemical Manufacturing (Parent) Co. blossomed out with a capital of £3,500,000. Ordinarily one would expect the public to be asked to subscribe for some of this capital, and the vendors would take a fair sum either in shares or cash resulting from the issue of shares, or both, as a reward for their services. But it appears that 455,000 of these shares were paid for in cash, and each holder of a sixpenny share in the original syndicate named was allotted 14½ £1 shares in the new venture. It is useless to attempt to vindicate such an inordinate measure of philanthropy by claiming that as the original adventurers undertook the risk they were justly entitled to such a remarkable reward. There is a limit at all times. The company was floated evidently because it had obtained a Government contract with virtually a monopolistic value. Why was it permitted to secure a monopoly? Had it merited such exceptional treatment? And how was it that the more moderate estimates of British firms of older standing were turned down?

Pertinent Questions.

Surely if the scope of the company's operation justifies a capitalisation of £3,500,000, it would have been a proof of business acumen to obtain control of existing firms with the special knowledge and facilities which they possess, and develop the new business primarily for the benefit of the nation. It can be taken as beyond all question that these sixpenny shares would not have been transformed into nominal shares of £14 10s. 0d. unless developments justified it. Fancy, by a simple stroke of the pen and a little trouble being able to convert £4,000 into £2,320,000! Such magic calls for the most thorough and exhausted investigation.

NEW COMPANIES.

East London Mica Co., Ltd.—Private company. Registered Aug. 8th. Capital £1,000 in £1 shares. Manufacturers of and dealers in mica and talc, etc. The subscribers are:—C. G. Grout, 7, Eastfield Road, Walthamstow, mica merchant, 400 shares; P. H. Butler, mica merchant, 10, Connaught Road, Chingford, 400 shares. Permanent directors are:—C. G. Grout and P. H. Butler. Registered office:—17a, Edinburgh Road, Walthamstow, E.17.

MORTGAGES, CHARGES AND SATISFACTIONS.

Eastbourne Aviation Co., Ltd.—Memorandum of satisfaction in full on June 3rd, 1918, of debentures dated Dec. 13th, 1917, securing £7,352 10s., has been filed.

DE BOLOTOFF—SELFRIDGE.

The interesting information has come to hand that Prince Serge de Bolotoff, elder son of Princess Wiasemsky—of Russia—was married on August 7th, to Rosalie Dorothea Buckingham Selfridge, daughter of Mr. Harry Gordon Selfridge, the well-known purveyor of goods and advertisements, from the Colossal Emporium, in Oxford Street.

Prince Serge de Bolotoff will be remembered by the pioneers of aviation as one of the permanent institutions of the earliest days. He began building an enormous aeroplane at Mourmelon-le-Grand, then the very nerve-centre of the world's aviation, somewhere about 1908. He succeeded in interesting a number of influential and wealthy people in his venture, and continued building the machine in France till 1911 or 1912. When Brooklands became, in its turn, the nerve-centre of aviation, he thereupon transferred his machine thither, and proceeded with his scheme.

More influential and wealthy people were induced to take an interest in it, including Lord Charles Beresford, but the shareholders, subscribers, donators, or whatever the financial backers of the scheme called themselves, "never were but always to be blessed" by seeing the machine off the ground. Despite its inventors' constant residence in the very centre of the latest aeronautical ideas the machine failed to embody up-to-date aerodynamic and mechanical knowledge, and conveyed, possibly erroneously, the idea that its proprietors did not grasp the full significance of what was going on around them.

Shortly before the war the machine—a monumental triplane—made a public appearance at Brooklands, and managed by much petrol and man-power to move along the ground, whereupon its under-carriage collapsed, much to the merriment of the unthinking aborigines of Brooklands. Thereafter Prince Serge became interested in the Albatros biplane, which was sent over here to demonstrate German progress, and there was at that time some question of his becoming the British representative of the Albatros firm.

When Brooklands was taken over by the Army, the de Bolotoff triplane was removed from its shed, and ultimately disappeared. Later on one learned that Prince Serge de Bolotoff had settled somewhere in Kent and was going to produce aeroplanes of Albatros type in vast quantities from his rural retreat. These did not materialise, but only a few days ago one was told that Prince Serge is still experimenting with an aeroplane or aeroplanes, with the aid of a wealthy person residing in the same part of Kent, and had recently, with his wealthy friend, shown extensive hospitality to certain members of the R.A.F. who had visited the neighbourhood.

Possibly the alliance of the houses of de Bolotoff-Wiasemsky and Selfridge may enable Prince Serge to fulfil his ambition and produce a real aeroplane. Anyhow, all his old acquaintances will wish him and his American bride every personal happiness and success, irrespective of aeronautical efforts.

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(*Continued from page 558.*)

The follg. are granted temp. commns. as Sec. Lts. (K.B.), :—C. J. Dowson (Lt., Essex R., Spec. Res.), and to be Hon. Lt.; R. L. R. Gale (temp. Lt., R.W. Kent R.), and to be Hon. Lt.; P. M. Lindesay (Lt., R. Innis. Fus., Spec. Res.), and to be Hon. Lt.; S. T. Lowe (Lt., Manch R., T.F.), and to be Hon. Lt.; A. B. Taylor (Lt., R.F.A., T.F.), and to be Hon. Lt.; J. Tocher (Lt., Camn. Highrs., T.F.), and to be Hon. Lt.; A. D. Drew (Lt., Lan. Fus., Spec. Res.), and to be Hon. Lt.; W. Hopps (temp. Sec. Lt., attd. Rif. Brig.); T. G. Murray (temp. Sec. Lt., E. Kent R.); G. W. M. Paterson (Sec. Lt, R. Scots, T.F.); G. H. Powe (Sec. Lt., Notts and Derby R., T.F.), July 10th; H. S. Laing (Sec. Lt., R.G.A., Spec. Res.), July 20th.

The follg. Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—F. W. T. Ross, July 22nd; W. Alexander, W. H. Abraham, A. R. Courtis, J. P Elliott, R. T. Gray, G. E. Hughes, H. B. Hubbard, R. A. Higgins, A. Hawthorn, F. R. Jennings, H. J. Loverseed, A. Maybaum, E. R. Petts, J. S. K. Warren, July 25th; H. R. Murray, G. Gedige, July 26th; J. R. Lofthouse, F. Caton, July 27th; J. R. Hill, A. C. Eaton, R. E. Hardwidge, V. Nutter, F. S. Towler, F. O. Cook, H. W. Derbyshire, July 31st; S. A. Barnes, J. W. Longland, J. J. Phillips, J. Boughey, J. A. Simson, H. Holmes, C. J. Locke, R. S. Oakley, G. A. May, R. M. E. Allen, A. C. Bailey, R. H. G. Boys, A. D. Cherry, J. G. Clayton, S. Coates, R. Franklin, J. V. Gardener, V. R. Homersham, P. J. C. Johnson, J. A. W. Jarvis, G. Kannemeyer, S. Kennan, W. Milburn, D. McArthur, A. B. Poel, A. F. Perry, W. T. Richards, W. G. Robinson, M. Wynn-Parry, G Wilton, Aug. 3rd; J. W. Hicks, E. A. Marchant, Aug. 4th.

The follg. relinquish their commns. on ceasing to be empld. :—Lt. W. F. Steedman, M.C. (Sec. Lt., S.A. Infy.), June 25th; Lt. G. Milner (Lt., R.E. Spec. Res.), July 26th; Capt. R. R. Orr-Paterson, Aug. 1st.

Lt. F. E. Davis relinquishes his commn. on acct. of ill-health, and is granted the hon. rank of Lt., Aug. 7th.

The follg. Lts. resign their commns. :—J O. Moss, L. H. Patterson, Aug. 7th.

Sec. Lt. G. Fiseran relinquishes his commn. on acct. of ill-health, and is granted the hon. rank of Sec. Lt., Aug. 7th.

The follg. Sec. Lts. relinquish their commns., having been found permanently unfit for further instruction as Pilots or Observers :—J. F. Shaw, R. Allison, W. G. Ewins, C. T. Chisnell, J. M. Wallace, W. R. Brown, T. F. Scollick, J. C. Dempster, Aug. 7th.

The date of appt. of Capt. E. R. Vaisey as temp. Maj. is Aug. 2nd, and not as stated in "Gazette," July 16th

The notification in "Gazette," May 21st, regarding Sec. Lt. F. A. Black, is cancelled.

The notification in "Gazette," May 28th, regarding Sec Lt. R. A. Arnott, is cancelled.

The notifications in "Gazette," June 4th, regarding the follg. Officers, are cancelled :—Sec. Lt. (Hon. Lt.) E. L. O'Leary, Sec. Lt. (Hon. Lt.) T. J. Molony, Sec. Lt. (Hon. Lt.) A. Lomax, Sec. Lt. (Hon. Lt.) T. B. M. Brown, Sec. Lt. W. A. B. Buscarlet.

The surname of Sec. Lt. J. R. W. Adamson is as now described, and not as in "Gazette," July 16th.

The notification in "Gazette," July 23rd, concerning Lt (temp. Capt.) G. O. Lighthouse, is cancelled.

ADMINISTRATIVE BRANCH.—Maj. L. Greig, M.V.O., to be Maj., from (M.), Aug. 1st.

A. B. Ennis (Maj., Res. of Officers) is granted a temp commn. as Capt. and to be Hon. Maj., June 29th.

Capt. R. Oxspring, M.C., to be Capt., from (A. and S.), July 15th.

Lts. to be temp. Capts while empld. as Capts. :—W. E. Berwick, April 1st; R. J. H. F. Beresford, July 25th.

The follg. are granted temp. commns. as Lts. :—E. Pope (Lt., Spec. Res., July 18th; A. Keiller, July 29th

Lt. (temp. Capt.) H. Parker-Jervis relinquishes his temp. rank on reverting to Lt., July 25th.

Sec. Lts. to be temp. Lts. while empld. as Lts. :—L. J. Grant, April 1st; P. Maggs, July 23rd

Lts. (O.) to be Lts. :—A. A. Watson, July 15th; J. W. C. Dick, Aug. 5th; Lt. R. E. Meek to be Lt., from (A. and S.), July 16th; Lt. H. M. Taylor to be Lt., from (K.B.), July 26th.

The follg. are granted temp. commns. as Sec. Lts. :—C. E. Beeson, July 13th; L. Glasspole, Aug. 1st; C. A. Wilmot, Aug. 3rd.

Capt. (temp. Maj.) A. F. Oxborrow is removed from the Royal Air Force on being convicted by Naval Court-Martial, June 14th.

Sec. Lt. G. N. Wood relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., Aug. 7th

The notification in "Gazette," June 7th, concerning Lt. (temp. Capt.) S. T. Grant, is cancelled.

The initials of Lt. (temp. Capt.) J. P. Ross are as now described, and not as in "Gagette," June 18th.

The notification in "Gazette," June 28th, concerning Sec. Lt., F. H. Barratt, is cancelled.

TECHNICAL BRANCH.—R. A. F. Kingscote (temp Lt.-Col., R.E.) is granted a temp. commn. as Lt.-Col., May 1st.

The follg. are granted temp. commns. as Majs. :—B. H. O. Armstrong Maj. (Bt. Lt.-Col.), R.E., A. Struben (late Maj., Gen. List), May 1st; Lt. (temp. Capt.) H. W. Mills to be temp. Maj. while empld. as Maj., July 23rd; Capt. (temp. Maj.) T. F. G., Strubell retains his temp. rank while empld. as Maj., from (S.O.), July 26th.

The follg. temp. Capts., R.E., are granted temp. commns. as Capts. :—W. A. Daft, H. T. Dumfress, J. F. Hawkins, A. M. Taylor, G. Waddell, and to be temp. Maj. while so empld., May 1st.

G. C. Milnes, M.C. (Capt., York and Lanc R.) is granted a temp. commn. as Capt., May 1st.

The follg. temp. Lts., R.E., are granted temp. commns. as Lts. :—J. G. N. Clift, H. Hooper, J. A. V. Welsh, May 1st.

Lts. (A. and S.) to be Sec. Lts., and to be Hon. Lts. :—W. F. E. MacLaren, A. V. Jones, E. D. Inskip, June 15th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. :—E. Whitmore, May 2nd; C. R. Brown, R. H. Nicol, May 3rd.

Sec. Lts. (Admin.) to be Sec. Lts. :—R. Guy, April 17th; A. J. Maguire, June 1st; R. O. Vasey, R. S. Dias, June 2nd; H. W. Richardson, July 1st; W. T. Bodger, July 3rd; C. E. English, F. Calnan, J. W. Brittain, T. C. Balfour, July 5th; A. A. Pollitt, July 6th; R. G. Sims, J. A. Tindall, G. T. Kitto, H. V. Stamer, July 7th.

The follg. are granted temp. commns. as Sec. Lts. :—W. B. Close (temp. Sec. Lt., R.E.), May 1st; C. L. Gandy (Lt., R.D.C., T.F.), and to be Hon. Lt., May 3rd; R. D. Fleet (Sec. Lt., R.G.A., Spec. Res.), W. E. Westwood (temp. Sec. Lt., Labour Corps), G. McDonald (Lt., Gord. Highrs., T.F.), and to be Hon. Lt., F. J. Lyons-Davies (Sec. Lt., R.E., T.F.), S. H. Pestell (Sec. Lt., Lond. R., T.F.), June 1st; E. H. Edleston (Lt., R.F.A., T.F.), and to be Hon. Lt., A. B. Fortt (temp. Sec. Lt., Labour Corps), June 2nd; J. T. M. Hill (Lt., Alberta R., C.E.F.), and to be Hon. Lt., June 15th.

Capt. E. I. Bingham relinquishes his commn. on acct. of ill-health, and is granted the hon rank of Capt., Aug. 7th.

Sec. Lt. E. W. Braendle relinquishes his commn. on acct. of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., Aug. 7th.

Sec. Lt. R. T. Belville resigns his commn., Aug. 7th.

MEDICAL BRANCH.—G. W. J. Bousfield is granted a temp commn. as Lt., Aug. 5th.

MEMORANDUM.—Lt. A. H. A. Gem, M.C., to be temp. Capt. while empld. as Area Supt. of Gymnastic Staff, June 4th.

ADMIRALTY, Aug. 7th.

The following Decoration has been conferred by the King of Italy for distinguished services rendered during the War, and the King has given unrestricted permission to the Officer concerned to wear the Decoration in question.

MILITARY ORDER OF SAVOY.

OFFICER.—Vice-Adml. M. E. F. Kerr, C.B., M.V.O. (Maj.-Gen., R.A.F.).

CORRECTIONS.

In "Gazette" of May 1st, 1918, for A.C., 2nd Gr., J. W. Key, O.N. F31161, read Air Mech., 2nd Gr., A. R. Key, O.N. F20262.

WAR OFFICE, Aug. 7th.

TANK CORPS.—Temp. Capt. I. H. Stockwood ceases to belong to the Corps on transfer to the R.A.F., June 15th.

AIR MINISTRY, Aug. 9th.

R.A.F.—The follg. temp. appts. are made at the Air Ministry :—

Staff Officers, 2nd Cl.—And to be temp. Majs. while so empld. :—M. H. Davies, M.C. (temp. Capt., Gen. List), and is granted a temp. commn. as Capt., vice Capt. (temp. Maj.) G. S. Trewin, July 8th; Lt. (temp. Capt.) W. Hodgson, vice Maj. J. G. Currie, July 16th.

Staff Officer, 3rd Cl.—Lt. E. B. Barker, and to be temp. Capt. while so empld., July 16th.

The follg. temp. appts. are made :—

Staff Officer, 1st Cl.—Maj. F. H. Unwin, and to be temp. Lt.-Col. while so empld., June 24th.

Staff Officers, 2nd Cl.—The Hon V. A. F. V. Russell (Lt.-Col., Bedf. R., T.F.), and is granted a temp. commn. as Maj. and to be Hon. Lt.-Col.; J. E. Hume (Maj., Conn. Rang.), and is granted a temp. commn as Maj., June 27th.

FLYING BRANCH.

Lt. (temp. Capt.) L. A. Hervey to be temp. Maj. while empld. as Maj. (A.), July 24th.

Capt. H. J. T. Berryman to be temp. Maj. while empld. as Maj. (A. and S.), July 25th.

Lts. to be temp. Capts. whilst empld. as Capts. (A.) :— F. H. Creasy, June 16th; A. W Saunders, July 29th, (Hon. Capt.) R. S. Daly, D.S.C., July 30th; J. Austin-Sparks, G. T Richardson, C. H. Smith, Aug. 3rd; W. S. Lawson, Aug. 4th.

Lts. to be temp. Capts. while empld. as Capts. (A. and S.) :—(Hon. Capt.) C. R. Rischbieth, July 18th; (Hon. Capt.) K. G. Boyd, July 20th; G. H. Boyce, E. J. L. Hope, July 30th.

Lt. (Hon. Capt.) R. S. Montague to be temp. Capt. while empld. as Capt. (Dir.), July 26th.

Lt. G. H. O. Strettle to be temp. Capt. while empld. as Capt. (K.B.), July 23rd.

Lt. (Hon. Capt.) L. L. King to be temp. Capt. while empld. as Capt. (S.), July 30th.

V. Cowper-Young is granted a temp. commn. as Hon. Lt., April 1st.

The follg. Flt. Cadets are granted temp. commns as Sec. Lts. (A.) :—F. E. Armstrong, R. J. Acheson, F. B. Barlow, G. K. Berry, L. P. Boulder, N. C. Boyles, C. F. Breckon, W. E. Campbell, W. L. Case, S. Cranston, M. A. Dixson, H. Eckley, C. E. Evans, H. N. Eyre, F. E. Finlay, J. Gries, E. G. Hamilton, N. De W. Jones, S. H. Jacobus, A. G. Kettles, J. H. Knowles, F. W. Le Blanc, J. H. Lee, D. St. C. Leitch, G. W. Lawson, C. W. Manson, J. W. McManamy, F. C. Moore, R. K. Moore, W. Morris, C. W. Payne, G. S. J. Payne, J. Pinch, K. B. Rector, A. B. Richardson, B. H. Robert, K. Stone, C. G. Tallmadge, W. Todd, G. A. Wrigglesworth, G. T. Young, July 4th.

The follg. Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A. and S.) :—H. Russell, April 1st; R. Lane, April 9th, F. J. Taylor (date of commn., Feb. 21st), April 24th.

The follg. prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (A. and S.) :—N. Owen, May 17th; B. F. Hale, June 2nd; J. N. Laughlin, June 6th; W. A F. Gordon, J. A. Reith, R. S. Willis, F. F. Smith, H. A. Lye, June 7th; N. A. Richardson, G. K. Waterhouse, R. S. Percival, D. J. B. Munro, M. S. Tench, G. H. Clarke, F. L. Hutchinson, L. W. Oliver, June 8th; S. M. Morris, June 10th.

The follg. are granted temp. commns. as Sec. Lts. (A. and S.) :—T. G. Bird, May 11th; J. M. Munro (late Lt.-Engr., R.N.R.), May 24th.

The follg. Flt. Cadets are granted temp. commns. as Sec. Lts. (A. and S.) :—F. W. Seed, July 2nd; S. K. Fey, July 26th; R. L. Henning, J. L. Pritchard, July 27th; J. A. B. Carr-Halfey, P. J. Pitts, R. K. Harvey, July 28th.

The follg Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—J. W. Perks, May 18th; H. H Davies, P. Porteous, May 25th; L. G. Best, July 5th; J. K. Best, Aug. 5th; W. D. Evans, A. E. Turffrey, C. E. Thorpe, F. W. Aldridge, A. C. Taylor, Aug 6th.

The follg. Sec. Lts. relinquish their commns, having been found permanently unfit for further instruction as Pilots or Obsrs. :—S. Borson, L. G. Davies, A. R. Frankish, J. R. McKew, M. J. Norton, C. G. Slater, J. D Taylor, A. Traviss, Aug. 10th.

Notifications in "Gazette" with reference to the follg Flt. Cadets (now Sec. Lts.) are cancelled :—J. K Best ("Gazette," July 16th); G. H. Haslem ("Gazette," July 16th); W. R. T. Chamberlain ("Gazette," July 30th).

The names of the follg. Cadets should be as now described, and not as in "Gazette," July 30th :—Thomas Leslie Heasman, Richard Emile Haestier.

The notification in "Gazette," May 28th, regarding Sec Lt. G. Swannell is cancelled.

The notification in "Gazette," June 14th, regarding Sec. Lt. H. M. S. Parsons is cancelled.

The notification in "Gazette," July 5th, regarding Lt. (temp. Capt.) F. W Burdick is cancelled.

ADMINISTRATIVE BRANCH.

Sec. Lt. S. G. Williams to be temp. Capt while empld. as Capt. July 15th.

Sec. Lt. A. G. Chapman to be temp. Lt. while empld. as Lt., June 18th.

The follg. are granted temp. commns. as Lts. :—C. R. Ansell (Lt., R.W.S. R.), July 1st; H. De L. Willis (Maj., R.M.L.I., ret.), and to be Hon. Maj., Aug. 1st; H. C. Atkinson (Dep. Commy. and Hon. Capt., ret. pay, I.A.), and to be Hon. Capt., Aug. 6th.

The follg. are granted temp. commns. as Sec. Lts. :—R. Breese, July 20th; H. Brighouse, J. S. Burt, W. F. Duff, C. W. N. Fuller, J. Harland, T. A. Higgs, A. M. Hooper, H. L. Jones, G. J. Mordaunt, W. H. North, H. V. Porter, R. C. Bookless, E. H. Sherman, M.C. (Hon. Sec. Lt., ret. list), Aug. 6th; E. Ware, Aug. 7th; D. A. Batwell, F. B. Jeffries, I. Wardle, T. Mumford (temp. Sec. Lt., ret. pay), and to be Hon. Lt., Aug. 8th.

The date of appt. to a temp. commn. as Sec. Lt. of W N. Doble is July 1st, and not as stated in "Gazette" July 25th

The date of appt. of Lt. G. W. Panter to temp. Maj. is April 3rd, and not as stated in "Gazette" July 30th.

Sec. Lt. E. Lawson is removed from the Service for absence without leave, May 1st.

Capt. C. Hunt relinquishes his commn. on ceasing to be empld., Aug. 10th.

Sec. Lt. K. E. Martienssen relinquishes his commn. on account of ill-health caused by wounds contracted on active service, and is granted hon. rank of Sec. Lt., Aug. 10th.

The follg. Sec. Lts. relinquish their commn. on account of ill-health, and are granted hon. rank of Sec. Lt :—C. B. S. Ritchie, T. H. Sharples, Aug. 10th.

Technical Branch.—Maj. F. W. Hodges to be Maj. (from Ad.), April 8th.

Capt. A. J. G. Anderson to be temp. Maj. while empld. as Maj., July 23rd.

To be temp. Capts. while empld. as Capts :—Sec. Lts. (Hon. Lt.) T. A. Ross, June 11th; Lt. (Hon. Capt.) R. H. Sievwright, July 18th.

Sec. Lts. to be temp. Lts. while empld. as Lts. :—(Hon. Lt.) H. M. Fulton, May 11th; J. A. McMullen, R. A. Silk, H. H. E. Wood, July 1st; S. Mills, July 22nd.

Capt. R. Clelland reverts to Lt. at his own request, July 22nd.

The notification in "Gazette" June 4th concerning Lt. (Hon. Capt.) H. M. Fulton is cancelled.

Medical Branch.—W. G. Weston is granted a temp. commn. as Capt., Aug. 1st.

The follg. are granted temp. commns. as Lts. :—P. A. Dormer, Aug. 6th; R. W. Stephenson, Aug. 7th.

Dental Branch.—W. C. Murray (late Dental Surg., R.N.V.R.) is granted a temp. commn. as Capt., and to be temp. Maj. while spec. empld., July 26th.

Memoranda.—Sec. Lt. H. C. Traver to take rank and prec. as if his appt as Sec Lt. bore date July 2nd.

The surname of Sec. Lt. C. G. Abel is as now described, and not as stated in "Gazette," July 19th.

OFFICIAL COMMUNIQUES.

NAVAL.

Admiralty Communiqués.

Aug. 9th.—A large amount of work has been done by Royal Air Force contingents working with the Navy during the period Aug. 1st to 7th.

On Monday last—as previously reported—our aircraft successfully attacked hostile Zeppelins, one of which was destroyed and another damaged.

On another occasion a formation of our large seaplanes in the North Sea sighted a Zeppelin at about 4,000 feet. They climbed to attack, and were apparently not at first seen by the enemy. Later the crew of the Zeppelin evidently sighted our machines, for all bombs were dropped, water ballast released, and the nose of the Zeppelin put up into practically a vertical position. By these tactics the Zeppelin was able to escape into the heavy clouds and was lost to sight. One of our machines was forced to land in Dutch waters. The machine was destroyed and the crew interned.

Convoy and anti-submarine patrols have been maintained. Enemy destroyers and submarines have been attacked and direct hits registered. Bad visibility has interfered with bombing operations over Ostend and Zeebrugge, but many tons of explosives have been dropped with good results.

During engagements that have taken place three enemy machines have been shot down in flames and six driven down out of control.

All our machines have returned safely.

Aug. 10th.—Reconnaissance carried out yesterday, Aug. 9th, by Royal Air Force contingents working under the Navy observed a German destroyer sunk eight miles north-west of Zeebrugge. This destroyer was in all probability sunk by a British mine.

Enemy mine-sweepers operating yesterday off Zeebrugge were heavily bombed by British aircraft.

Aug. 12th.—British light forces, accompanied by aircraft of the R.A.F. Contingent, reconnoitred the West Frisian Coast yesterday morning (August 11th).

The British forces were heavily attacked by German aircraft, and six motor-boats failed to return. With this exception we suffered no damage or casualties.

The aircraft attacked a German airship north of the island of Ameland and destroyed it, bringing it down into the sea in flames from a great height.

MILITARY.

G.H.Q. Communiqués.

August 6th, 7.50 p.m.—On August 5th our aeroplanes carried out reconnaissances and observation for our artillery.

Very few enemy machines were sighted, and there were no combats.

In addition to the German aeroplanes destroyed on August 3rd in air fighting, another was shot down on that day by machine-gun fire from the ground.

Aug. 7th, 8.17 p.m.—Four German machines were shot down during the day of Aug. 6th, and one was brought down in flames on the following night.

During the 24 hours, 24 tons of bombs were dropped by us on railways, aerodromes, and billets, and several direct hits were observed.

All our machines returned safely.

Aug. 8th, 10.15 p.m.—On August 7th observation was rendered difficult by ground mist. A considerable amount of reconnaissance and photography was, however, carried out.

Over 17 tons of bombs were dropped during the day with good effect, and a large number of combats took place.

Fifteen hostile machines were brought down and seven driven down out of control.

Two of our machines are missing.

A ton of bombs was dropped during the night, operations being hampered by bad weather.

One of our night-flying machines is missing.

Aug. 9th, 8.19 p.m.—On Aug. 8th our aeroplane squadrons co-operated with the other arms on the battle front throughout the day. The line reached by our attacking infantry was reported by our contact aeroplanes. The positions of the hostile artillery in action and columns of German infantry and transport on the march were signalled to our guns by our artillery machines. Other machines supplied our advanced troops with ammunition from the air.

Co-operation with Tanks was carried out systematically. Our machines assisted the Tank crews with information, attacked strong points and other position with bombs and machine-gun fire, and, by dropping smoke bombs along the line of their advance, assisted to conceal the approach of the Tanks from the enemy. Our contact machines working with the cavalry rendered valuable service.

Flying low in front of our advancing line, our fighting squadrons shot at and bombed the enemy in his retreat, causing havoc among masses of hostile troops and transport on roads congested with traffic.

Our bombing squadrons, flying a few hundred feet from the ground, attacked trains, railway junctions, and bridges

Forty-eight hostile machines are recorded as destroyed by our aeroplanes, and 17 others were driven down out of control. Five hostile balloons were shot down in flames.

Fifty of our own machines are missing, most of these casualties being due to fire on the ground. One of our night-flying machines also failed to return.

On Aug. 9th our aviators continued the work of co-operation with British infantry, artillery, cavalry, and Tanks on the battle front. German troops and transport were again attacked with bombs and machine-gun fire from a low height whenever a suitable target offered. The Somme bridges were heavily bombed both by day and night.

Elsewhere along the British front activity in the air has been slight, but the ordinary work of photography, reconnaissance, and observation has been carried on.

Aug. 10th, 8.43 p.m.—In air fighting on Aug. 9th we destroyed 39 enemy machines and drove down 22 out of control.

Twenty-three of our machines are missing. One of those reported missing on the 8th inst. has since returned safely.

Thirty-eight and a half tons of bombs were dropped by us during the day on different targets, and 18½ tons in the course of the following night.

On Aug. 10th the work of our aviators in the battle area continued without intermission, and many combats with German aeroplanes took place.

Our balloons followed up close behind the line and carried out valuable observation throughout the day.

Aug. 11th, 8.30 p.m.—On Aug. 10th there was intense fighting in the air, mainly over the battle area. Forty-one enemy machines were destroyed during the day and 20 were driven down out of control.

Twelve of our aeroplanes are missing.

Twenty-three and a half tons of bombs were dropped by our aviators in the course of the day, and 31 tons, principally upon bridges and stations in the Somme Valley, during the following night.

The work of reconnaissance and observation for artillery fire was actively carried on along the whole front, while co-operation with the other arms in the battle has been actively continued. The amount of small arms ammunition fired from the air upon retreating enemy troops and transport has broken all recent records.

On the night of Aug. 10th-11th two hostile night-bombing machines were brought down by us. The first was a giant German machine with five engines and a heavy load of bombs. Anti-aircraft fire has also shot down two other enemy machines during the last two days.

Aug. 12th, 8.50 p.m.—Fifty tons of bombs were dropped by our aviators on August 11th and the following night. The two chief objectives both by day and by night were the Somme crossings and certain railway junctions of military importance.

Courtrai station and sidings were heavily bombed by some of our squadrons in broad daylight from a low height without loss to us. Many direct hits were observed. At night Péronne and Cambrai stations were severely attacked with good effect.

All our night bombing machines safely returned.

Enemy aircraft flying in large formations were active on the battle front. Twenty-nine hostile machines were destroyed in air fighting during the day and 24 more were driven down out of control. Four hostile balloons were shot down in flames

Five of our machines are missing.

The observation work of our artillery aeroplanes and balloons was steadily carried on. On the night of August 10th-11th a Gotha machine was brought down by anti-aircraft fire in addition to those already reported

War Office Communiqués.

Aug. 9th.—The G.O.C. Italy reports :—

Since my last *communiqué* the Royal Air Force have destroyed 11 hostile aeroplanes and one observation balloon.

One of our machines is missing.

Home Command Communiqués.

August 6th, 1.40 p.m.—Five enemy airships attempted to cross our coasts last night, but while still at sea were attacked by Royal Air Force contingents working with the Navy.

Three were brought to action, one of which was shot down in flames 40 miles from the coast, and another was damaged, but probably succeeded in reaching its base.

AIR FORCE.

Air Ministry Communiqués.

The following dispatches have been received from the Headquarters of the R.A.F., Independent Force, in France :—

Aug. 8th.—On the morning of August 8th our machines carried out a successful attack on the explosive factories at Rombach (north of Metz). Good results were obtained.

All our machines returned.

Aug. 11th.—On the morning of the 11th instant our squadrons attacked the railway station at Karlsruhe and a hostile aerodrome. Clouds hindered observation, but one large bomb was seen to hit the station at Karlsruhe, causing an explosion. Fighting took place during most of the outward and return journeys, as a result of which one of our machines was driven down under control and three hostile machines were driven down out of control.

Aug. 12th.—On the afternoon of the 11th instant, in addition to bombing already reported, a few bombs were dropped on the triangle of railways at Metz. On the night of 11th-12th instant our machines attacked two hostile aerodromes and various ground targets with bombs and machine-gun fire.

On the day of the 12th instant one of our squadrons, despite unfavourable weather conditions, successfully attacked the aeroplane and chemical works at Frankfurt. Bursts were observed well in the centre of the objective, and large numbers of enemy aeroplanes attacked and kept up a running fight for about 30 miles. Two enemy aeroplanes were destroyed.

All our machines returned safely.

Another of our squadrons attacked the hostile aerodrome at Hagenau (16 miles north of Strassburg) with excellent results. This squadron just after crossing the lines met large numbers of enemy aeroplanes and at once decided to give battle. As the result of severe fighting four enemy aeroplanes were destroyed and one other was driven down out of control

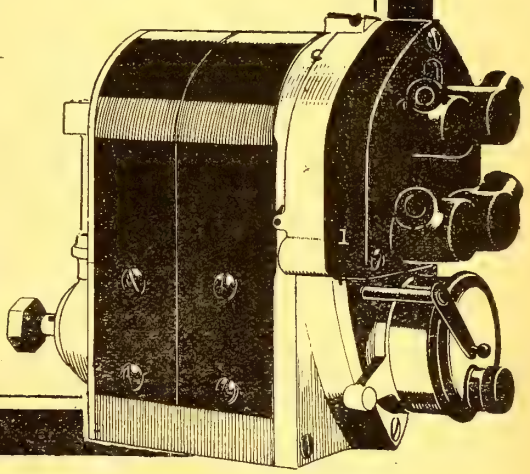
Two of our machines are missing.

The squadron re-formed after this fight and proceeded to bomb its objective. A direct hit was obtained on a large hut on the aerodrome, and a bomb fell on four enemy machines on the ground and destroyed them.

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are generally known for their high quality. The first essential in their manufacture is to understand the use to which they may be put, the next is to produce the best possible magneto for the purpose. That we have succeeded is demonstrated by their performance in actual service.

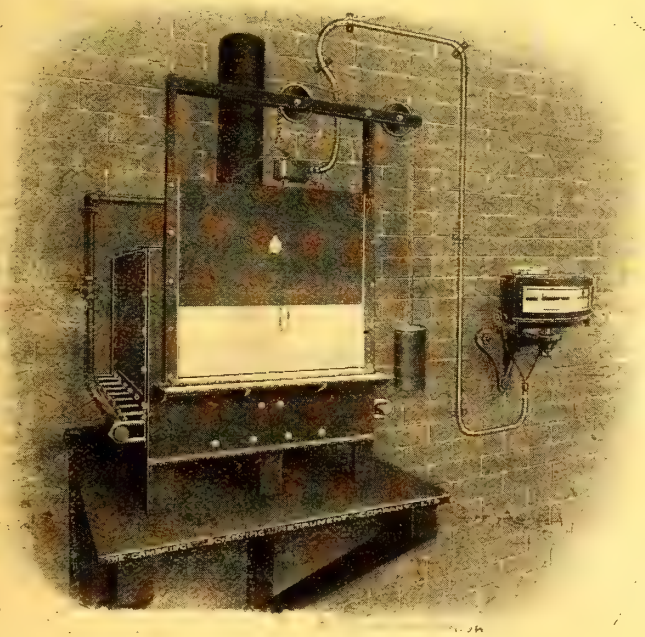
Our present efforts and energies are wholeheartedly devoted to increasing the production of these magnetos for the use of the Government.



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THE CASUALTY LIST.

MILITARY.

Reported Aug. 8th.

CORRECTION.—Formerly a Prisoner of War in Germany, now reported arrived in England:—Wilson, Lt. C. B., M.C., Hussars, attd. R.F.C., should read Wilson, Lt. T. C., R.F.C.

CANADIAN FORCE.—DIED OF WOUNDS.—Bird, Lt. M. H., Cent. Ont. Regt., attd. R.A.F.
Howard, Lt. M. L., W. Ont. Regt., attd. R.A.F.

MISSING.—Meredith, Lt. R. E., B.C. Regt., attd. R.A.F.

PREVIOUSLY INCORRECTLY REPORTED PRISONER, NOW REPORTED MISSING.—Eaton, Lt. E. C., Sask. Regt., attd. R.A.F

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONER IN GERMAN HANDS.—Blight, Lt. T. F., Man. Regt., attd. R.A.F.

Reported Aug. 9th.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Ffolliott, Lt. C. R. H., R.F.C.
Scott, Lt. V. W., E. Surr. R., attd. R.F.C.

Reported Aug. 10th.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Sotham, Lt. R. C., R. W. Kent R., attd. R.F.C.

Reported Aug. 13th.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONER IN GERMAN HANDS.—Cook, Sec. Lt. C. W., R.F.C.

CASUALTIES AMONG N.C.Os. AND MEN.
THE DATES ARE THOSE OF THE OFFICIAL LIST.

PREVIOUSLY MISSING, NOW REPORTED BY THE GERMAN GOVERNMENT KILLED OR DIED OF WOUNDS.
JULY 30th.—R.F.C.: Edgington 1384 Serjt. S. F. (Woodley).

AIR FORCE.

Reported Aug. 8th.

KILLED.—Berry, Sec. Lt. C. F., R.A.F.
Binnie, Lt. W. H., R. Scots (T.F.) and R.A.F.
Collingwood, Lt. R. M., R.A.F.
Forbes, Lt. N. J., R.A.F.
Gunther, Sec. Lt. H. H., R.A.F.
Marriott, Sec. Lt. G., R.A.F.
Wright, Sec. Lt. T., R.A.F.

WOUNDED.—Apps, Lt. G. F. M., R.A.F.; Baskerville, Capt. M. G., R.A.F.; Gann, Sec. Lt. W. H., R.A.F.; Patman, Sec. Lt. G. H., R.A.F.; Riddell, Sec. Lt. J., R. Sco. Fus., attd. R.A.F.; Swatridge, Sec. Lt. C. J., R.A.F.; Taylor, Lt. W. C., R.A.F.

MISSING.—Garnett, Lt. J. N., R.A.F., attd. R.A.F.; Penwarden, Sec. Lt. H. G., R.A.F.; Tratman, Lt. L. W., R.A.F.

Reported Aug. 9th.

KILLED.—Cuffe, Lt. R. T., R.A.F.
Dodds, Sec. Lt. S. J. A., R.A.F
Lott, Lt. C. W., R.A.F.
Perris, Sec. Lt. N. F., Lond. R., attd. R.A.F.
Pollock, Sec. Lt. J. F., R.A.F.
Talbot, Sec. Lt. W. C., Leins. R. and R.A.F
Smith, Lt. F. C., R.A.F.

WOUNDED.—Bryer-Ash, Lt. G., R.A.F.; Duncan, Sec. Lt. C. W., R.A.F.; Fife, Sec. Lt. J. W., R.A.F.; Keep, Lt. A. S., M.C., R.A.F.; Ludgate, Sec. Lt. T. K., R.A.F.; Pennefather, Maj. W., R.A.F.; Slade, Lt. G. O., R.A.F.; Smith, Lt. J. D., R.A.F.; Thomson, Sec. Lt. S. A., R.A.F.; Woodhouse, Capt. J. W., R.A.F.

MISSING.—Butler, Lt. R. A., R.E. and R.A.F.; Jones, Lt. A. R., R.A.F.; Thompson, Lt. F. G., R.A.F.; Thornley, Sec. Lt. S. C., E. Lan. R. and R.A.F.; Young, Lt. C., R.A.F.

Reported Aug. 10th.

KILLED.—Beachcroft, Lt. W. F., R.F.A. (S.R.) and R.A.F.
Binckes, Lt. R., R.A.F.
English, Sec. Lt. J. P. F., R.A.F.
Froneman, Capt. E. E., R.A.F.
Hunt, Sec. Lt. G. E., K.O.Y.L.I., attd. R.A.F.
Steel, Lt. L. G., R.A.F.
Wilson, Sec. Lt. D., S. Lanc. R., attd. R.A.F

WOUNDED.—Blythe, Lt. E., R.A.F.; Breeze, Sec. Lt. N. G., R.A.F.; Fowler, Lt. F., R.A.F.; Griffith, Lt. J. S., R.A.F.; Harper, Sec. Lt. G. B., R.A.F.; Low, Sec. Lt. G. E. D., R.A.F.; Middleton, Sec. Lt. W., R.A.F.; Mottershaw, Sec. Lt. H., R.A.F.; Newman, Sec. Lt. W. H., R.A.F.; Rickards, Sec. Lt. R. H., R.A.F.; Thomson, Sec. Lt. A. N., R.A.F.; Tredcroft, Lt. E. H., R.A.F.; Turner, Lt. R., R.A.F.; Whittaker, Lt. H. A., R.A.F.

MISSING.—Anderson, Sec. Lt. W. A., R.F.A.; Aitken, Sec. Lt. J., R.A.F.; Auster, Sec. Lt. N. C. K., S. Wales Bord. and R.A.F.; Babbitt, Sec. Lt. T. E., R.A.F.; Crickmore, Lt. E. B., R.A.F.; Phipson, Lt. H. G. S., R.A.F.; Scudamore, Lt. W. S. K., R.A.F.; Waterlow, Capt. E., R.A.F.; White, Lt. R. E., R.A.F

Reported Aug. 12th.

KILLED.—Belley, Sec. Lt. F. J., R.A.F.
Brown, Lt. M. C., R.A.F.
Delay, Sec. Lt. A. R., R.A.F.
Fox, Lt. B. C., R.A.F.
Hart, Sec. Lt. F. W., R.A.F.
Lowcock, Maj. R. J., R.A.F.
McLeod, Capt. M. McKay, R.A.F.

DIED.—Arden, Lt.-Col. J. H. M., D.S.O., R.A.F.

WOUNDED.—Beattie, Lt. C. A. B., R.A.F.; Lorainc, Maj. R., R.A.F.; Rattray, Sec. Lt. A. B., R.A.F.; Taber, Lt. D. F., R.A.F.; Wilson, Lt. J. C., R.A.F.

MISSING.—Angus, Sec. Lt. K. R., R.A.F.; Bayliss, Lt. W. M. F., 9th Lancers, attd. R.A.F.; Carson, Sec. Lt. S. E., R.A.F.; Conlan, Sec. Lt. T., R.A.F.; Dickie, Lt. C. B., Black Watch, attd. R.A.F.; Dubber, Capt. R. E., R.A.F.; George, Sec. Lt. S. S., R.A.F.; Griffiths, Sec. Lt. D. B., R.A.F.; Hawkins, Sec. Lt. T., R.A.F.; Irvine, Lt. V. R., R.A.F.; James, Capt. R. A., Middx. R., T.F., and R.A.F.; Kemp, Lt. F., R.A.F.; Kirklaud, Lt. J. T., R.A.F.; Scadding, Sec. Lt. E., R.A.F.; Trapp, Lt. D. J., R.A.F.; Van Tilburg, Sec. Lt. J. A., R.A.F.; Vosper, Lt. R. A., R.A.F.; Yates, Sec. Lt. R. A., R.A.F.

INTERNED.—Comerford, Sec. Lt. J. J., R.A.F.; Copley, Lt. A., R.A.F.; Coward, Lt. G. R., R.A.F.; Gray, Capt. J. A., R.A.F.; Pattisson, Lt. J. R., R.A.F.; Potter, Lt. S. B., R.A.F.; Purvis, Lt. W. F., R.A.F.; Reid, Lt. J. F., R.A.F.; Simpson, Lt. D. T., R.A.F.; Simpson, Lt. J. W., R.A.F.; Vance, Lt. J. D., R.A.F.

Reported Aug. 13th.

KILLED.—Cash, Sec. Lt. F. E., R.A.F.
Fowler, Lt. C. J., R.A.F.
Miles, Sec. Lt. W. N., R.A.F
Rossington-Barnett, Lt. J. A., R.A.F.
Slade, Lt. R. B., R.A.F.

DIED OF WOUNDS.—Ball, Lt. H. J., R.A.F.
Stringfellow, Sec. Lt. J. H., R.A.F.

DROWNED.—Carr, Sec. Lt. A. W., Conn. Rang., attd. R.A.F.

WOUNDED.—Berry, Capt. D. M., Royal Fus. and R.A.F.; Bridgwood, Capt. P. G. K., R.A.F.; McNamara, Sec. Lt. J. J., R.A.F.; Robertson, Sec. Lt. J., R.A.F.; Wearne, Sec. Lt. H., R.A.F.

MISSING.—Mollett, Lt. F. N., Hamps. R. and R.A.F.; Morton, Capt. E. B. G., R.A.F.; Rawlings, Sec. Lt. B., R.A.F.; Rose, Lt. G., R.A.F.; Shaw, Lt. F. A., M.C., Lancs Fus. (T.), attd. R.A.F.; Smith, Lt. A., Lincs. R., attd. R.A.F.; Spence, Lt. J. H., R.A. and R.A.F.

MISSING, BELIEVED PRISONER.—Marshall, Sec. Lt. N. H., R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED BELIEVED PRISONER.—McLeod, Lt. G. D., R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED BELIEVED WOUNDED AND PRISONER.—Mercer-Smith, Sec. Lt. V., R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS.—Claye, Capt. H., Sher. For., attd. R.A.F.
Glasspoole, Sec. Lt. G. H., R.A.F.
Sugden, Sec. Lt. J. E. W., R.A.F.
Tannenbaum, Lt. H., R.A.F.

PREVIOUSLY REPORTED BELIEVED PRISONER, NOW REPORTED PRISONER.—Clarke, Sec. Lt. H. A., R.A.F.

PREVIOUSLY REPORTED BELIEVED WOUNDED AND PRISONER, NOW REPORTED PRISONER.—Milani, Sec. Lt. R. S., R.A.F.

PRISONERS.—Cole, Lt. K. R., R.A.F.
Parsons, Lt. C. S., R.A.F.

CASUALTIES AMONG WT. O., N.C.Os., AND MEN OF THE R.A.F.
THE DATES ARE THOSE OF THE OFFICIAL LIST.

KILLED.

AUG. 2nd.—Gibson 406951 2nd A/M R. J. (Tottenham, London).

DIED.

AUG. 2nd.—Bate 3687 Serjt. C. F. (Herne Hill, London) Bracey 98419 2nd Pte. E. J. (St. Albans, Herts.); Poulton 79633 2nd Pte. G. (Abingdon, Berks.).

WOUNDED.

AUG. 2nd.—O'Hara 77360 Serjt. H. F (c/o Japan Consul, London); Townsley 44822 2nd A/M T. (Leeds).

MISSING.

AUG. 2nd.—Borwein 43335 Serjt. J. (Marvinskata, Krementzug, Russia); Smith 100436 Act. Serjt. T. W. (Burton-on-Trent)

PERSONAL NOTICES.

NAVAL.

DEATH.

TANNER.—Capt. John Champain Tanner, R.A.F., eldest son of the Rev. Maurice and Lallie Tanner, of Eversley Rectory, Hants, was born at Cheltenham on July 2nd, 1897. He was educated at Cheltenham (Junior School) and at Marlborough, and received his commission in the R.N.A.S. on Feb. 14th, 1916, at the age of 18. He was severely wounded near Arras in July, 1917, and again accidentally wounded in May, 1918. He was killed on Aug. 1st owing to an aeroplane accident while instructing in Lincolnshire.

MILITARY.

DEATHS.

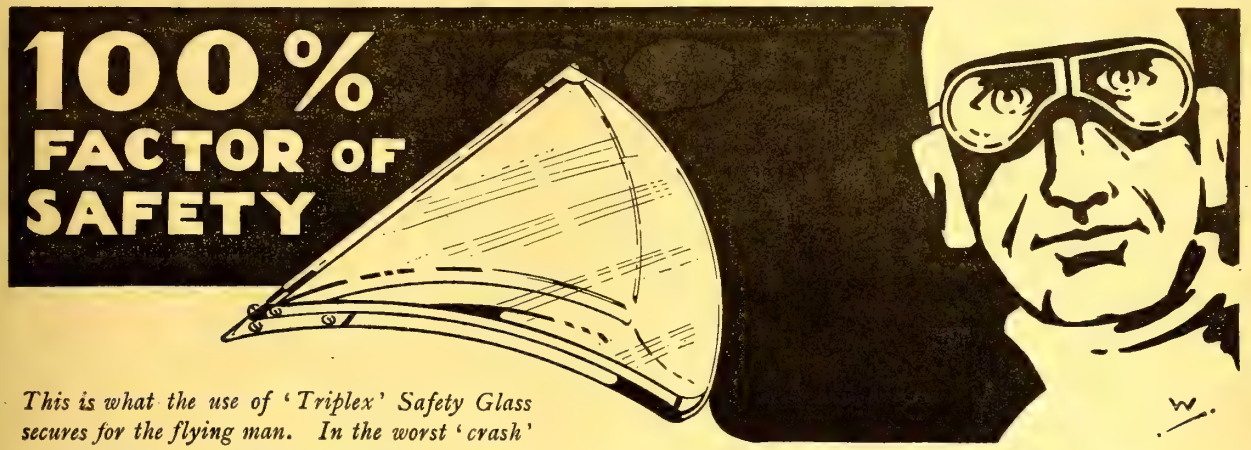
ALDER.—Sec. Lt. T. Alder, R.A.F., killed while flying in Hampshire, was the son of Mr. and Mrs. E. Alder, of Hanman Road, Gloucester. After going through the Somme offensive in 1916 as a ranker in a Gloucestershire battalion, he received a commission in the East Lancashire Regiment, but later transferred to the Royal Air Force, and received his wings. He was a cashier in business in Cheltenham before the war.

ARDEN.—Lt.-Col. John Henry Morris Arden, D.S.O., Worcester Regt., was born in 1875, and was son of the late Rev. A. H. Arden. He was educated at Malvern College, entered the Army in 1897, and became captain in 1900. He joined the Egyptian Army, from which he retired after a distinguished career in 1912. He obtained the brevet of major in 1915, and was promoted lieutenant-colonel in 1916. He served in the South African War, 1899-1902 (Queen's Medal, with three clasps, and King's Medal, with two clasps), and the Sudan in 1912 (medal and clasp, and 2nd Class Osmanieh). At the outbreak of the present war he rejoined the Worcestershire Regiment as captain. He was twice mentioned in dispatches, and held the 1914 Star. He won his D.S.O. for conspicuous gallantry and ability at Neuve Chapelle on March 12th, 1916.

He was badly wounded in July, 1915, and again dangerously wounded in the action of July 1st, 1916, when in command of the Northumberland Fusiliers. After his recovery he was given a Staff appointment, and was made commandant of an R.F.C. Cadet Wing.

Having been asked to undertake an important work of military organisation in the Near East, he is now reported to have died at Cairo on July 23rd, shortly after his arrival in Egypt.

CARR.—Lt. Arthur Wilmot Carr, R.A.F., who was drowned while bathing at Aboukir on July 6th, was aged 35, and was the eldest son of the late Rev. Henry Bryan Carr, of St. John's College, Cambridge. Educated at Westminster City School, he offered himself for service at the outbreak of war in August, 1914, and obtained a commission in the Royal Irish Fusiliers in 1915.



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DELMAR-WILLIAMSON.—Lt. George F. Delmar-Williamson, Black Watch and R.A.F., who was accidentally killed while flying over Wiltshire on July 12th, was the only son of Mr. and Mrs. Delmar-Williamson, of Cheltenham, and was educated at Glyngarth School and Cheltenham College. He passed out of Sandhurst in 1916, and received a commission in the Black Watch. Being attached to the R.F.C., he gained his wings, and subsequently served at the front, being much commended for his reconnaissance and photographic work and promoted to temporary rank of captain. Invalided home with concussion in September, 1917, he was on recovery appointed an instructor at a Wiltshire aerodrome. He was only 19 years of age.

FISHER.—Flt. Cadet Oscar Fisher, R.A.F., previously 5th Seaforth Highlanders, who was killed on July 30th while flying, was the fourth son of Mr. and Mrs. T. E. Fisher, of Grimsby.

FITZGERALD.—Lt. R. F. Fitzgerald, M.C., R.A.F., who is reported killed in action, has had an exciting career in the Army. He was twice wounded and then taken prisoner, but escaped, and afterwards served in the Royal Air Force in Italy. He created something like consternation in the enemy ranks by stealing out at night and capturing sentries. He made quite a hobby of this dangerous enterprise.

FOGGIN.—News has been received from the Secretary of the Air Council that Major Cyril E. Foggin, R.A.F., son of Mr. and Mrs. W. S. Foggin, Richmond Villas, Gosforth, Newcastle, is reported to have been killed while on service in France, in a motor-car accident.

Major Foggin learned to fly at Eastbourne, and took his certificate, No. 349, on Oct. 29th, 1912. He turned out to be a very daring pilot. He joined the R.F.C. as an N.C.O. pilot early in the war and was severely wounded, losing the sight of one eye. Nevertheless he pluckily continued to fly, and after a long period of instructional work at home he went to the front again at his own special request as a scout pilot. His death in an accident is a great loss to the R.A.F., and he will be mourned by a large circle of friends.

HAWKINS.—Lt. Reginald Hawkins, R.A.F., who was killed in a crash after a night reconnaissance in France on July 29th, was the son of Mr. G. A. Hawkins, of Ashley House, Battledown, Cheltenham, and was 19 years of age. He secured his wings six months ago, and was posted to a fighting squadron in France only a few days before he was killed.

LUGARD.—Capt. Edward March Lugard, R Lancaster Regt. and R.A.F., who was killed as the result of a flying accident on July 30th, was the son of Mr. and Mrs. Cecil Lugard. Educated at Rossall, he entered Sandhurst at the end of August, 1914, and from there received his commission in November, 1914, and served with his regiment at the front. Early in 1916 he joined the R.F.C., and, being speedily promoted to Captain, saw a considerable amount of service in France with that Force as Flight Commander.

MANNOCK.—It is unhappily practically certain that Major Mannock, R.F.C., has been killed.

It was stated by the "Evening Standard" that Maj. Edward Mannock, D.S.O., M.C., R.A.F., "who had brought down 58 German machines, is reported missing. He was last seen fighting over the German lines on July 20th, and soon afterwards his machine was noticed to be falling in flames." The journal adds: "Maj. Mannock has had a distinguished career since he joined the R.F.C. 18 months ago. He rapidly became one of our foremost fliers, and when Canada's great aerial fighter, Maj. Bishop, returned to the Dominion some months ago he succeeded Maj. Bishop in command of his squadron. Maj. Mannock's record of 58 machines down dates up to a month ago. How many additional machines he brought down since then is not known. When war broke out Maj. Mannock was in Turkey, and coming home through Bulgaria joined the R.A.M.C., attaining the rank of serjeant. Then he obtained a commission in the R.F.C., and although 30 years of age proved as skilful in the art of downing Huns as our youngest dare-devils. Maj. Mannock possesses the D.S.O. and M.C., each with two bars. Maj. Mannock is a nephew of Mr. J. P. Mannock, the well-known billiard player, and a native of London."

In a letter to the relatives of Major Mannock, a brother officer has written as follows:—

"Lieutenant —— and your brother went out this morning (July 26th) at five to seek for hostile aircraft, of which they met two at 5.30, and drove one of them down in flames. They then proceeded back to our lines at about 200 feet. Lieutenant —— was just behind, when this officer saw flames coming from Major Mannock's machine, which immediately fell out of control, and crashed to the ground. Lieutenant —— followed it down, and watched to see if Major Mannock extricated himself, but saw only wreckage and flames. Lieutenant —— himself only just managed to get to our lines, being shot down some yards this side, but was unhurt himself.

"Please accept the deepest sympathy from a whole squadron mourning a brave man and the best of comrades. There was no man or officer in the squadron but loved him for his bravery, for his cheerfulness, for his skill, or his patience in teaching others, and for his personality, which made him at once the most efficient and the most popular commanding officer in France.

"He was a friend to us all, and had a great affection for the personnel of the squadron, which, had he lived, he would have made the most famous flying squadron in the world, for he was endowed with the spirit of leadership, and any of his pilots would cheerfully follow him, no matter where he led. I speak as if there was no spark of hope that he is alive. That is hardly true, but I am sorry to say the chance is one in a thousand. I will, however, inform you immediately we have any further news. Again let me assure you of the real sympathy of all the officers and men of this squadron and of other squadrons with whom he came in contact, for he was beloved by all."

[Major Mannock was a typical Irish fighting man, a great character, full of fun and yet in deadly earnest about his work. He is credited with having brought down over 60 enemy aeroplanes, and received as reward the Military Cross (gazetted Sept. 17th, 1917), a bar to the Military Cross (gazetted Oct. 18th, 1917), and the D.S.O. on a recent date. In the estimation of the late James McCudden, who was one of the best judges of fighting pilots who ever lived, Major Mannock was one of the most brilliant fighters we have yet produced, but a trifle too reckless. It is men such as he who redeem in the eyes of the world the foolish part which Ireland as a nation has played in the war.—C.G.G.]

MEIKIE.—Lt. A. J. B. Meikie, R.A.F., who was accidentally killed in Cheshire, was the only son of Mr. J. C. Meikie, a well-known shorthorn breeder, of Cotehay Farm, Brockhampton, near Cheltenham, and was 18 years of age. He was a pupil at a Coventry engineering works when he joined the A.S.C. eighteen months ago, although under age, and afterwards received a commission in the R.A.F., in which he became a skilled pilot.

RICHARDS.—Lt. H. S. Richards, Essex Regt., attd. R.A.F., was accidentally killed while flying in England. He was the 1914 Rhodes Scholar (New Zealand University). He was educated at the Rangiora High School and Canterbury University College, where he had a distinguished career, taking his M.A. degree with double first-class honours in mathematics, the senior scholarship in mathematics, and the Cook memorial mathematical prize. He represented his college at the University tournaments in 1913-1914. After entering Balliol in 1915, he was commissioned to the Essex Regt., with which he served during the Somme battle until wounded in the attack upon Thiepval in Sept., 1916. On being discharged from hospital at the end of 1917 he transferred to the R.A.F., and was instructing as a pilot at the time of his death. He is the third New Zealand Rhodes Scholar to fall in this war.

RIDOUT.—Sec. Lt. Allan Gibbs Ridout, who was killed on July 28th, at the age of 19, while flying in England, was the second son of Mr. A. W. Ridout, of Regina, Sask., Canada, and a great-grandson of the late Capt. William Swabey, R.H.A., who fought in the Peninsular campaign and at Waterloo. He was born in Eastern Canada, but received the greater part of his school training in the Great Canadian West. He had just completed his course in the High School at Regina, which prepared him for a university career, when he decided to enlist as a cadet in the Royal Air Force. He joined the Royal Flying Corps in October, 1917, and entered the large training camp for Cadets near Toronto, Ontario. He passed successfully through all the training schools of the Air Force in Canada, and eventually became a pilot. Later he came to England as a commissioned officer, and soon became a successful pilot here. Throughout his career he had never broken a machine before his first crash, which ended in his death.

SHEPHERD.—At an inquest on July 30th on the body of Sec. Lt. John Arnold Shepherd, R.A.F., who was killed by the fall of his aeroplane whilst flying in East Kent, it was mentioned that he lost one leg whilst serving with the infantry in France. He belonged to Sheffield.

STUART-SMITH.—Lt. Philip James Stuart-Smith, Lord Strathcona's Horse, attd. R.A.F., who was previously missing, is now reported by the German Government killed, or died of wounds. He was the elder son of Mr. James and Mrs. Stuart-Smith, and the husband of Claire Stuart-Smith.

Engagements.

NEWTON—FOLKARD.—The marriage of Capt. T. M. B. Newton, R. Berks Regt. and R.A.F., to Edith Marjorie Folkard will take place at St. Andrew's, Farnham, Surrey, on Sept. 4th, at 2 o'clock. All friends will be welcomed at the church.

POCKNEY—PRESTON.—An engagement is announced between Leslie C. Pockney, R.F.A. and R.A.F., eldest son of the Rev. and Mrs. C. Pockney, of Moseley, Birmingham, and Janet O., youngest daughter of the late Dr. T. J. Preston, R.N., and Mrs. Preston, 16, St. John's Park, Blackheath.

Marriages.

BAKER—BROCVIELLE.—On Saturday, Aug. 3rd, in London, Capt. Lovell Dickens Baker, B.A.Oxon., R. Dublin Fus., attd. R.A.F., elder son of Mr. and Mrs. John Ridley Baker, of San Francisco, was married by a Registrar, to Renée Madeleine Brocvielle, youngest daughter of M. et Mme. Camille Brocvielle, of Amiens.

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BUCHANAN-WOLLASTON—WRIGHTSON.—The marriage arranged between Lt. Hugo J. Buchanan-Wollaston, Dorset Yeo. and R.A.F., second son of S. G. Buchanan-Wollaston, of Exmouth, and Beryl, Assistant Administrator, Q.M.A.A.C., elder daughter of the late R. B. Wrightson, M.D., and Mrs. Wrightson, of Aldeburgh, Suffolk, took place at St. John's Church, Southwick Crescent, W.2, on Aug. 14th.

CUMMINGS—TREMELLEN.—On Aug. 6th, at All Saints Church, N.W., Capt. Philip Cummings, D.F.C., Seaforth Highlanders and R.A.F., son of the late Mr. Cummings and Mrs. Cummings, of "Little Orchard," Amersham, was married to Kathleen Marie, elder daughter of Mr. W. J. Tremellen and Mrs. Tremellen, of Hampstead, N.W.

Births.

ALEXANDER.—On Aug. 11th, at 4, Whitehall Court, S.W., the wife of Brig.-Gen. William Alexander, C.M.G., D.S.O.—a son.

BENSTEAD.—On July 31st, at Derby, to "Kathleen," the wife of Lt. H. C. Benstead, North Stafford Regt. and R.A.F., a daughter **(Joan).**

AIR FORCE.

Deaths.

BELL.—Lt. Laurie Bell, R.A.F., who was accidentally killed whilst flying on July 29th, was the youngest son of F. J. Bell, of Bournemouth. He was 20 years of age.

BENITZ.—Lt. Frank Allyn Benitz, R.A.F., who was killed in action on Aug. 5th, was the second son of the late Wm. O. Benitz and Mrs. Benitz, Estancia "La California," Santa Fé, Argentine. He was 25 years of age.

BURTON.—Sec. Lt. Stanley George Burton, R.A.F., who was killed in action on July 30th, was the only child of Mr. and Mrs. Burton, 63, Cotswold Road, Westcliff-on-Sea. He was 24 years of age.

CLOETE.—Sec. Lt. Mowbray Nourse Cloete, R.A.F., who was accidentally killed on Aug. 6th while flying, was the only son of the late Mr. and Mrs. Sebastian Cloete, of Rhodesia, South Africa. He was 18 years of age.

COLERIDGE.—Lt. Colin Goss Coleridge, R.A.F., who was killed on July 23rd while flying, as instructor, at Deseronto, Ontario, was the second son of Mr. and Mrs. John Coleridge, Snettisham, Norfolk. He was 29 years of age.

COLVILL-JONES.—Capt. Thomas Colvill-Jones, R.A.F., who died on May 24th at Limberg, Germany, was the second son of Mr. and Mrs. R. Colvill-Jones, of Buenos Aires, Argentina.

DAWE.—Lt. James Jeffrey Dawe, R.A.F., who was reported missing in France on July 7th is now believed to have been killed on that date. He was the only son of Sydney and Emily A. Dawe, Ashlyns, Rickmansworth. He was 19 years of age.

GARDNER—Mc NEIL.—It was reported in the East Midlands on August 11th that Flight Cadet Frank Gardner, R.A.F., of Pulborough, and Air-Mech. Ronald McNeil, R.A.F., of Illinois, U.S.A., were killed on the previous day. An accident to a wing caused the machine to drop about 1,000 ft., both men being picked up dead.

KING.—Lt. Kenneth Vivian King, R.A.F., who was killed in action on July 30th, was the younger son of Mr. and Mrs. George Edwd. King, The Vineyard, Abingdon.

McGIBBON.—While flying on August 10th Flight Cadet J. McGibbon, R.A.F., was killed. He had reached the borders of Cambridgeshire, when, from some unknown cause, his machine nose-dived to the ground. The machine was wrecked, and its pilot was so badly injured that he died immediately.

MACKENZIE.—Sec. Lt. Douglas Mackenzie, R.A.F., who died on Aug. 4th, as the result of an accident whilst flying, was the only child of the Rev. Dr. and Mrs. Mackenzie, of Honan, North China, and Toronto, Canada, and nephew of Lt.-Col. W. Grant Morden, of Heatherden Hall, Iver Heath, Bucks. He was 24 years of age.

ROBERTSON.—Lt. William Scott Robertson, R.A.F., son of Mr. William Robertson, editor of the "North-Eastern Daily Gazette," Middlesbrough, has been killed in action. Mr. Robertson, who was 20 years of age, was educated at the Middlesbrough High School, and later was a student in naval architecture at the Armstrong College, Newcastle.

RYLANDS.—Lt. Peter Wolferstan, Instructor R.A.F., who was killed on Aug. 9th while flying, was the eldest son of T. Kirkland and Bertha N. W. Rylands, of The Down House, Tockington, near Bristol. He was 19½ years of age.

SCHOLTE.—Capt. Owen Scholte, M.C., R.A.F., who died on July 30th, was the second son of Mr. and Mrs. Scholte, Sunnyfield, West Heath, Hampstead.

TELFER.—Lt. William H. Telfer, R.A.F., son of Mr. and Mrs. Telfer, Osborne Road, Newcastle, has been killed. He was educated at Dame Allan's School, Newcastle. Before joining the Air Force he was employed in the aeronautical engineering department of Armstrong, Whitworth, and Co.'s works. He was a keen lover of manly sports, and excelled in cricket and football.

THATCHER, BELL and BEAN.—At an inquest held before a London district coroner on Aug. 1st on the bodies of Lt. Harold Blake Thatcher, R.A.F., of Bristol, Sec. Lt. Laurie Bell, R.A.F., of Bournemouth, and Flt.-Serjt. Arnold Ralph Bean, R.A.F., of Burslem, it appeared from the evidence that while Mr. Thatcher and Serjt. Bean were flying at a height of about 500 feet, Mr. Bell, who was flying a single-seater, dived from a position some 700 feet higher, his machine striking and cutting clean through the two-seater, which folded its wings, and crashed to earth. The three men were instantly killed. A verdict of accidental death was returned.

THOMAS.—Capt. Owen Vincent Thomas, R.A.F., who died on July 29th as the result of an accident while flying, was the only surviving son of Brig.-Gen. Sir Owen and Lady Thomas, Albemarle Mansion, 1, Albemarle Street, Piccadilly, W.1. He was 24 years of age.

WALKER.—Lt. James P. Walker, R.A.F., of 5, Leweston Place, Stamford Hill, N.16, was accidentally killed on Aug. 3rd in northern waters. He was 24 years of age.

Engagement.

WEBB—MILLS.—A marriage has been arranged, and will shortly take place between Lt. D. J. G. Webb, R.A.F., youngest son of Mr. C. C. C. Webb, D.L., and Mrs. Webb, of Kilmore, Nenagh, and Knocktoran, Knocklong, and Cornelia Mary, eldest daughter of the late Mr. A. H. and Mrs Mills, of Curraghbawn, Nenagh, Co. Tipperary.

Marriages.

FIELDING—KELLIE McCALLUM.—On Aug. 10th, at St. Andrew's, Ashley Place, Lt. George Basil Fielding, R.A.F., was married to Esmé, youngest daughter of the late Mr. and of Mrs. Outram Kellie McCallum.

GOODE—ABBOTT.—On Aug. 10th, at St. Peter's, Hinckley, Leicester, Clarence Shirley (Wireless, R.A.F.), only son of Mr. and Mrs. T. S. Goode, of Hinckley, Leicester, was married to Hilda, youngest daughter of the late Mr. J. Abbott and Mrs. Abbott, of Abbotsford, Hinckley, Leicester, by the Rev. Father Humbert Everest.

WARD—YOUNG.—On Aug. 7th, at St. Paul's, Knightsbridge, Capt. Charles E. Ward, R.A.F., son of E. A. Ward, of Watford, was married to Irene Muriel Constance, eldest daughter of C. V. Young, solicitor, by the Rev. Leith Boyd.

Births.

CHAPMAN.—On Aug. 1st, at "Inverurie," Talbot-road, Carshalton, the wife of Sec. Lt. H. A. Chapman, R.A.F., of a son.

LINE.—On Aug. 5th, at 23, Homefield Road, Wimbledon, the wife of Capt. James Line, R.A.F., of a daughter.

MUTTER.—On July 30th, at Holmdale, Broadstone, Dorset, to Bertha Elsie, wife of Lt. A. R. Mutter, R.A.F.—a son (Anthony Robert).

SMITH.—On Wednesday, Aug. 7th, the wife of Lt. Austin Smith, R.A.F., of a son.

TERRELL.—On July 30th, at Clifton, the wife of Capt. F. J. Terrell, R.A.F., of a son.

FOREIGN COMMUNIQUES.

FRANCE.

August 6th.—Army of the Orient.—British aviators brought down one enemy aeroplane and bombarded the enemy's depôts in the Struma valley.

Aug. 8th.—During the month of July, 184 enemy aeroplanes were brought down, 30 by anti-aircraft guns; 154 enemy aeroplanes were seen falling out of control in their lines, 15 of them hit by the fire of our anti-aircraft guns. In addition to this total of 338 enemy machines which have been destroyed or seriously damaged, our aeroplanes have also set fire to 49 hostile captive balloons.

During the same month our day-bombarding squadrons dropped 194 tons of bombs, and our night squadrons 356 tons, or more than 550 tons, on the bridges in the Marne Valley, enemy troops which had advanced south of the Aisne, and the railway stations in the region of Laon, Hirsin, and Rethel.

Aug. 10th.—The French Air Service yesterday (Friday) took part in the battle in intimate touch with the infantry, marking the advance realised by our infantry, and harassing the enemy with bombs and machine-guns.

Despite rather unfavourable atmospheric conditions, our squadrons engaged in numerous combats, in the course of which 14 German machines were brought down or fell out of control. Nine captive balloons were set on fire.

Our day-bombarding formations dropped over 23 tons of bombs on troops and concentrations in the valley of the Avre and in the battle zone, as well as on the stations behind the front.

Our night-bombing air service also dropped nearly 17 tons of bombs on the stations of Ham, Tergnier, Nesle, Hombleux, and on numerous bivouacs, causing fires and explosions.

Army of the Orient.—French aviators have bombed enemy encampments in the region of Pogradec (Lake Ochrida), and British aviators the railways in the region of Seres (east of the Struma).

Aug. 12th—Army of the Orient.—The day was calm on the whole of the front. French aircraft bombarded enemy camps to the north-east of Monastir and east of Seres.

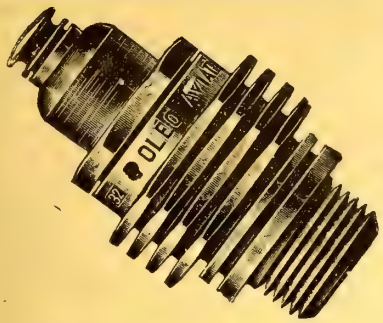
ITALY.

August 6th.—Atmospheric conditions favoured the aerial operations of airships of our and Allied aviators. Six hostile machines and a captive balloon were brought down.

Aug. 7th.—In air combats six hostile aeroplanes were brought down.

Aug. 7th.—On the night of August 2nd our naval aviators bombarded the military works and harbour of Durazzo, dropping more then 600 kilogrammes (over half a ton) of explosives. This morning they dropped an additional 1,500 kilogrammes (a ton and a half) with visibly good results. All our aviators returned without mishap to their base.

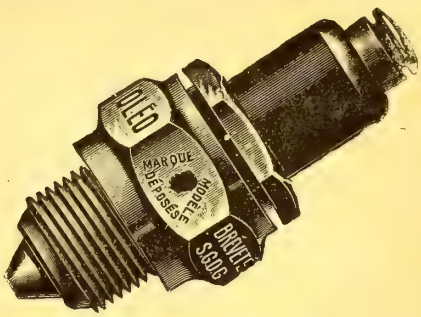
Aug. 9th.—Army and Royal Navy airships bombed military establishments at Pola, in the Venetian Plains, and near Trent. Two hostile machines were brought down in air fighting.



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They flew over the city at an altitude of less than 800 metres, dropping several thousands of leaflets. The crowds in the streets could be clearly seen. Our machines, which were not attacked, flew back by way of Wiener Neustadt, Graz, Laibach, and Trieste.

The squadron maintained its formation throughout and returned to its aerodrome at 12,40 p.m. One of our machines, however, was obliged to descend near Wiener Neustadt owing to engine trouble.

Aug. 10th.—Two enemy aeroplanes were brought down yesterday in combats.

Aug. 11th.—During air fighting five enemy aeroplanes were brought down.

Aug. 12th.—Airships and aeroplanes during the day yesterday bombarded with satisfactory results military objectives in the enemy's lines of communication. Five hostile planes were brought down in combats by our and Allied aviators.

BELGIUM.

Aug. 11th.—Sous-Lt. Av. Willy Coppens (who this week already had achieved his 22nd victory by bringing down in flames the German balloon at Zonnebeke) on the morning of Aug. 10th set on fire the enemy balloons at Lerringhe, Ruyterhoek, and Gapaard (east of Messines), and thus scored his 23rd, 24th, and 25th victories.

GERMANY.

August 6th.—Lt. Udet won his 44th aerial victory and Lt. Bolle his 28th.

Aug. 8th.—Baron von Boerigk obtained his 20th aerial victory.

Aug. 9th.—We shot down, over the battlefield, 30 enemy aeroplanes. Lt. Loewenhardt won his 49th, 50th, and 51st, Lt. Udet his 45th, 46th, and 47th, Lt. Baron von Richthofen his 33rd, 34th, and 35th, Lt. Kroll his 31st and 32nd, First Lt. Billik his 28th, Lt. Koennecke his 23rd, 24th, and 25th, and Lt. Auffahrt his 20th air victories.

Aug. 10th.—We shot down 32 aeroplanes over the battlefield. Lt. Loewenhardt obtained his 52nd and 53rd victories; Lt. Udet his 46th, 47th, and 48th; Capt. Berthold his 41st and 42nd; Lt Baron von Richthofen his 36th and 37th; Lt. Billik his 30th and 31st; Lt. Bolle his 29th; Lt. Koennecke his 26th, 27th, and 28th; and Lt. Neumann his 20th.

Aug. 11th.—There has been very lively aerial activity over the battlefield. We have shot down 23 more enemy aeroplanes and one captive balloon. Lt. Proll gained his 33rd, Lt Veltjens his 24th and 25th, Lt. Laumann his 21st, 22nd, and 23rd, and Lt. Auffahrt his 21st aerial victory.

Aug. 12th.—Seventeen enemy aeroplanes and four captive balloons were shot down yesterday. Lt. Udet obtained his 49th, 50th, 51st, and 52nd aerial victories, Lt. Freiherr von Richthofen his 38th, Lt. Veltjens his 26th, 27th, and 28th.

In July, 518 enemy aeroplanes were shot down on the German front, 69 by our anti-aircraft guns. Thirty-six captive balloons were also shot down. Two hundred and thirty-nine of the aeroplanes are in our possession. The rest were seen to fall within the enemy's positions.

We have lost 129 aeroplanes and 63 captive balloons in battle.

AUSTRIA.

Aug. 7th.—In Albania a bombing squadron composed of aeroplanes and seaplanes attacked the Italian aerodrome east of Valona. Bursts of fire and columns of smoke testified to the success of the raid.

Aug. 12th.—In their flights over Feltre and the Seven Communes Italian squadrons attacked from a low height hospitals which were recognisable at a great distance. Patients and persons who were attending to them were killed.

TURKEY.

August 2nd.—One of our air squadrons dropped bombs on an enemy (Arab) encampment west of Maan (60 miles south-south-east of the Dead Sea), with good results.

BULGARIA.

August 4th—After an aerial combat, the German aviator Finzeler brought down an enemy aeroplane, which fell in flames behind our positions in the Tcherna Bend.

Aug. 5th.—"An enemy aeroplane was forced by our fire to land behind our lines south of Lake Doiran."

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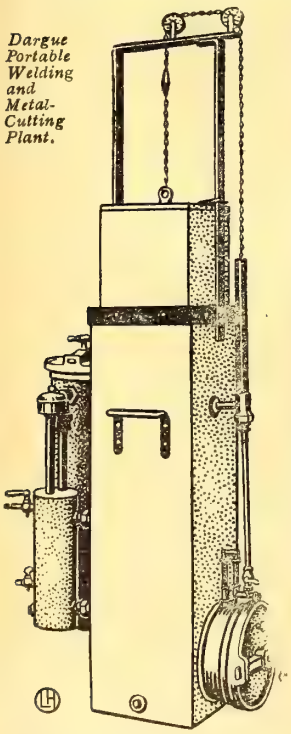
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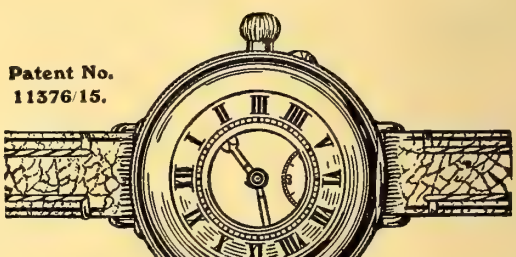
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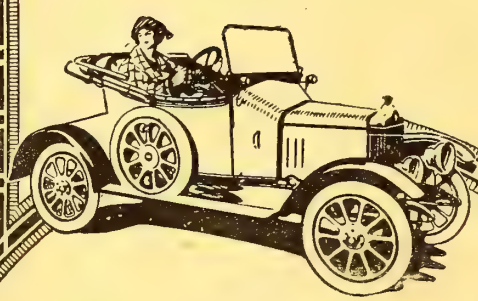
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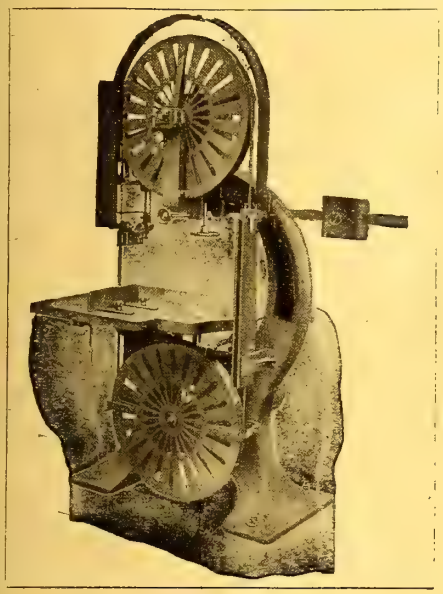
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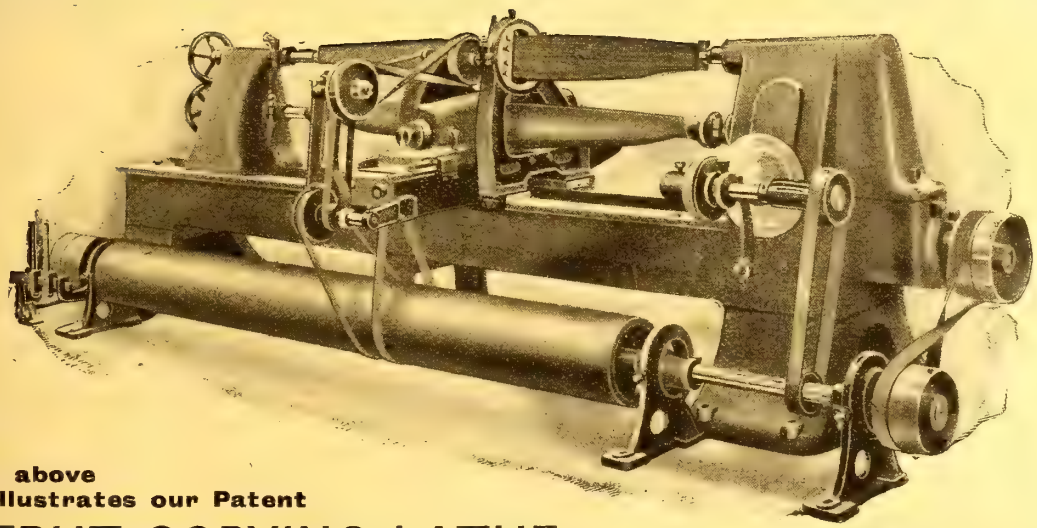
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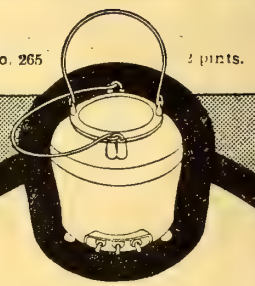
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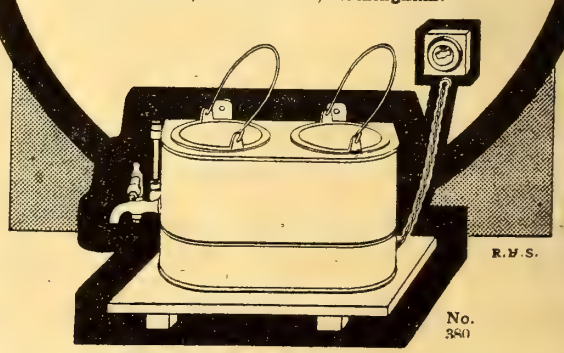
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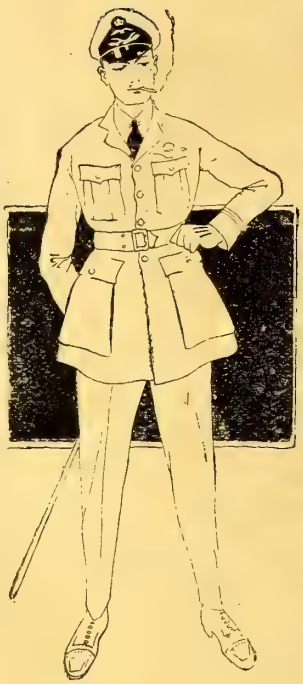
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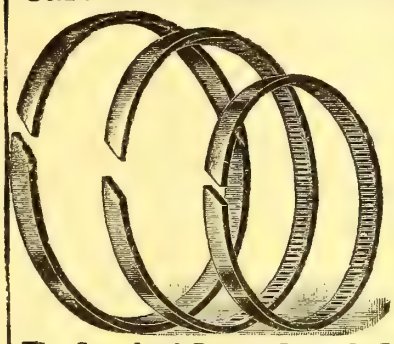
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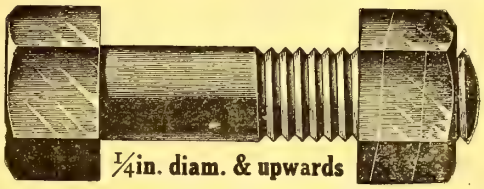
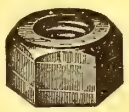
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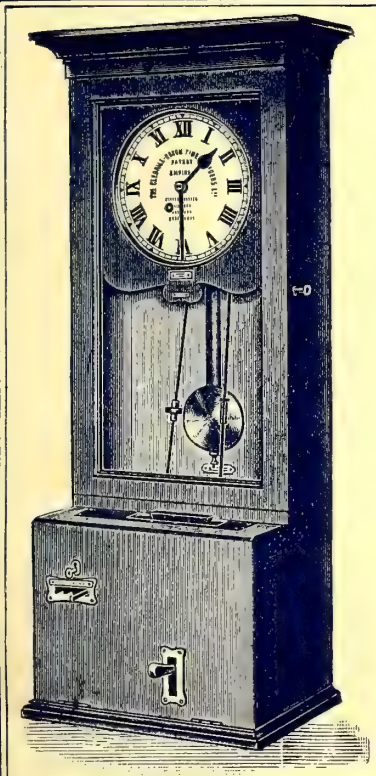


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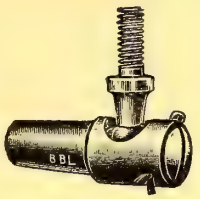
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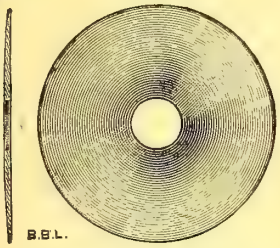


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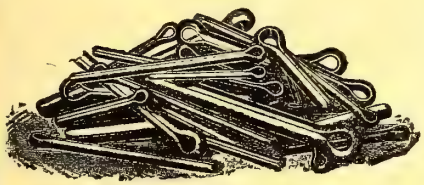


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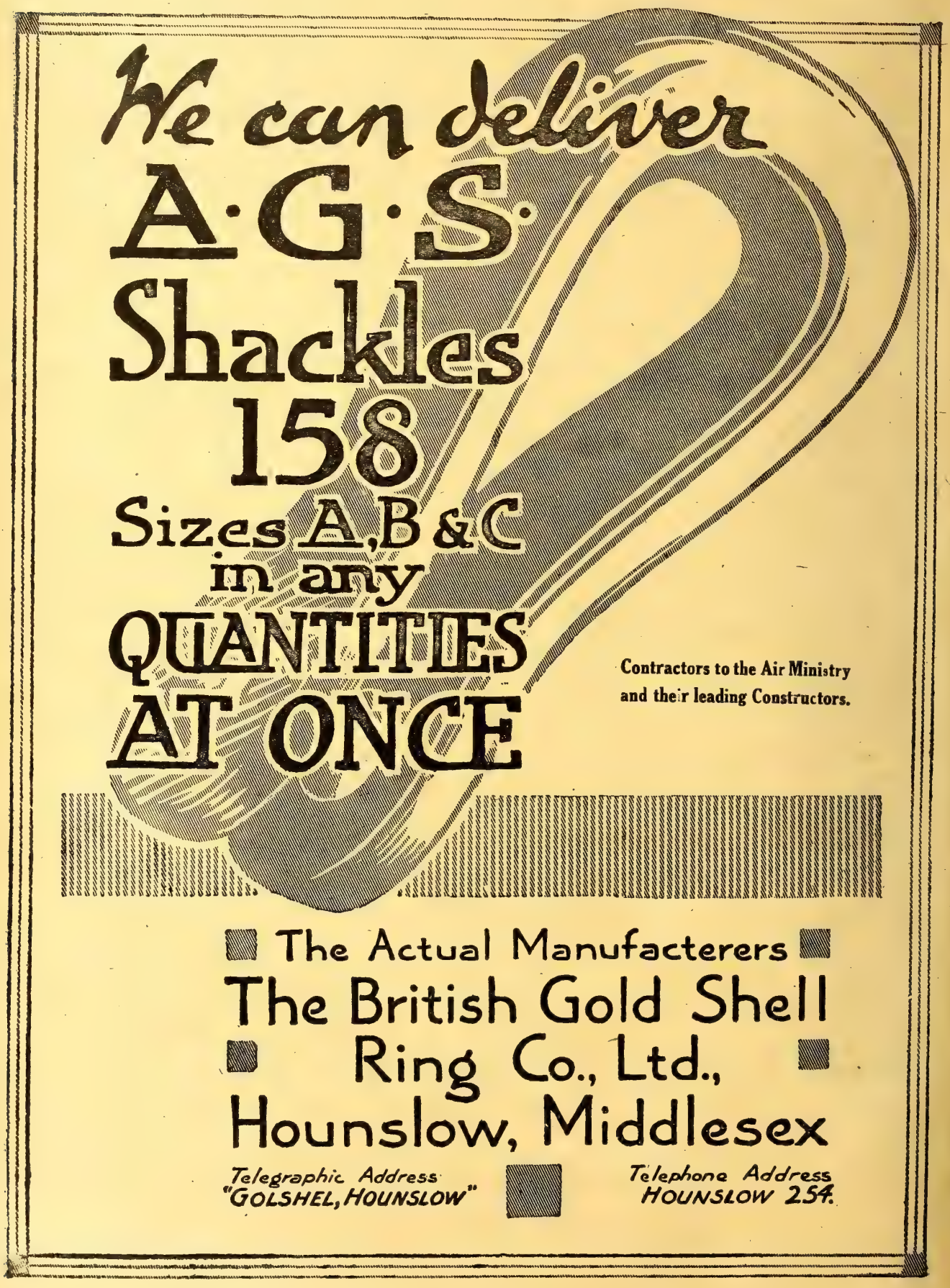
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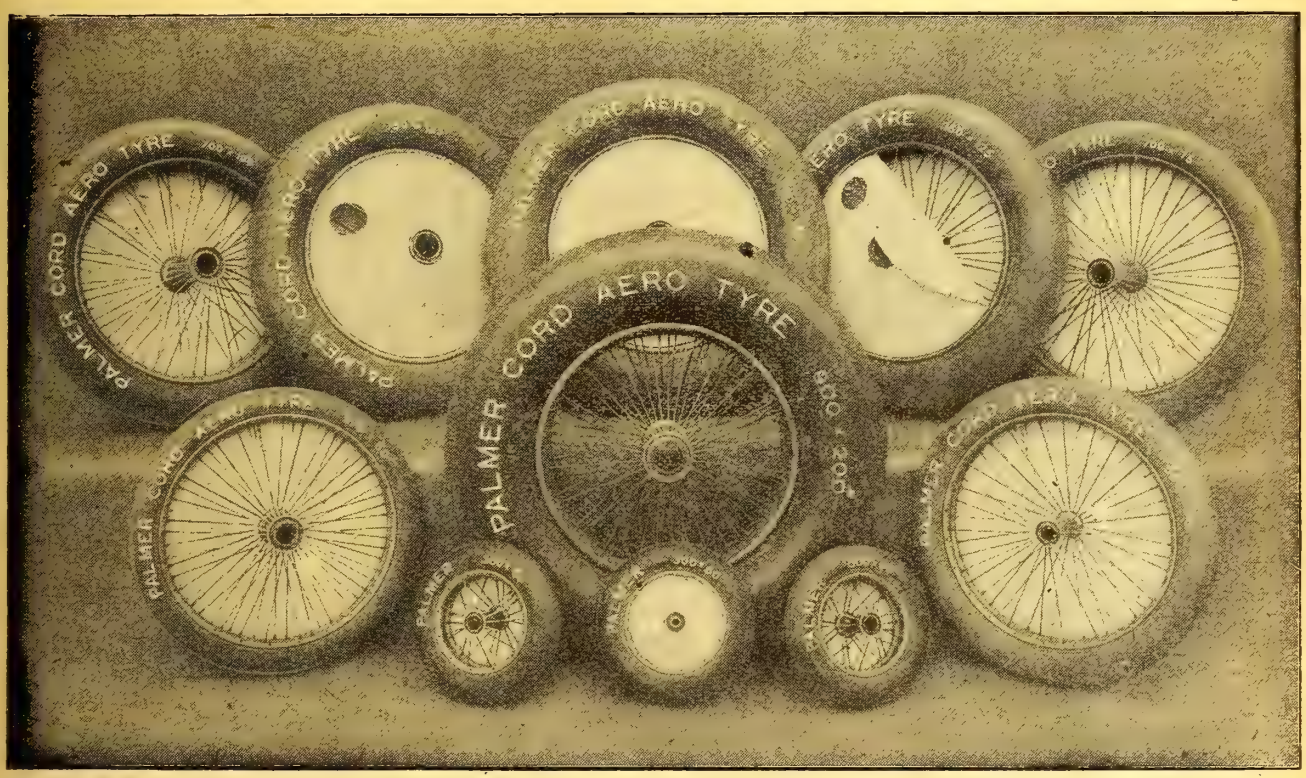
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,,	17	72.39	12.7	Central	,,	77	178.	44.45	132/46	,,	82	185.	55.	135/60
560 × 60	30	89.	31.75	Central	,,	92	185.	55.	135/50	,,	85	185.	55	Central
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,,	79	178.	44.45	Central	650 × 125	119	178.	55.	132/46	,,	201	185.	60.32	125/60
,,	100	178.	38.09	132/46	750 × 125	33	150.	38.09	Central	900 × 200	107	185.	55.	Central
,,	101	178.	31.75	132/46	,,	77	178	44.45	132/46	,,	108	185.	55.	125/60
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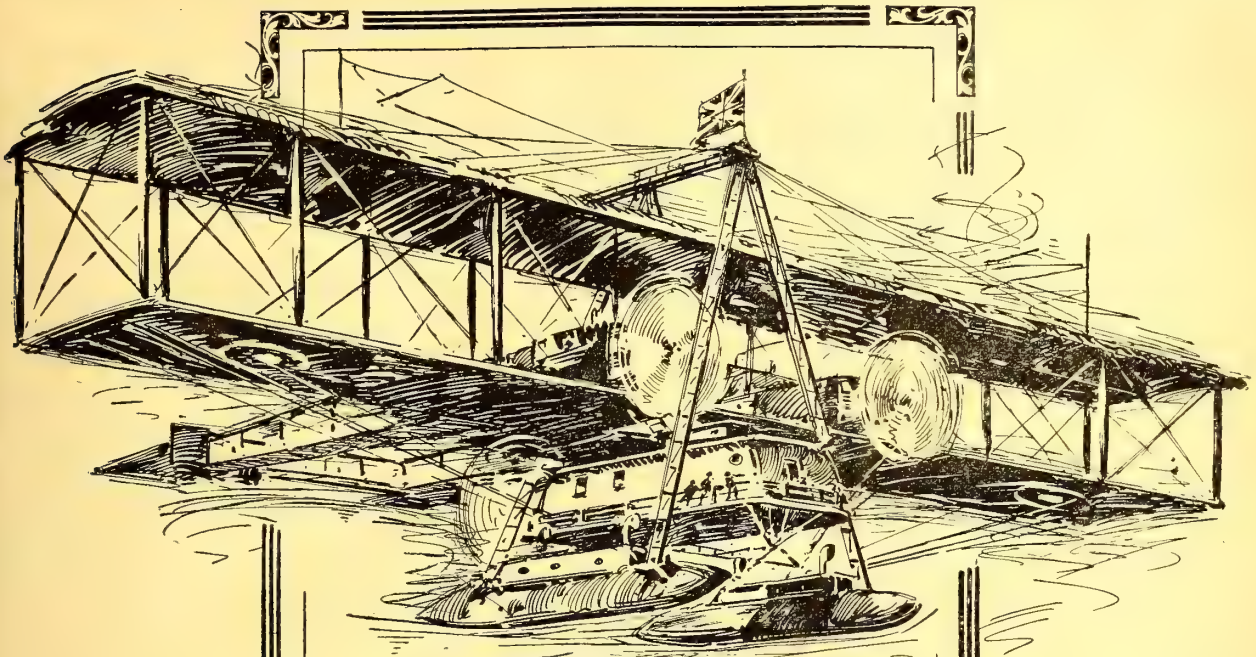
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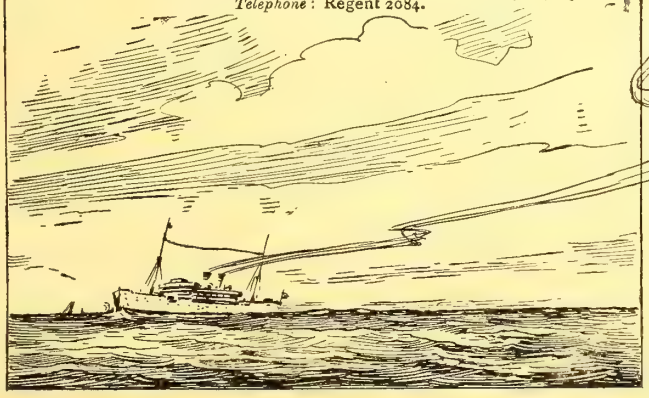
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Somehow Mr. David Lloyd George reminds one of that story. Not that one would insinuate that Mr. George is given to the over-consumption of alcohol, for one believes that in such matters he is one of the most abstemious of men. One refers solely to sobriety of utterance in public speeches.

Mr. George is much given to making speeches. In fact, speeches have made him, and speech-making is his job. But until late years his speeches have not been notable for their moderation in tone or phraseology. One of his personal friends is credited with having said: "Before he gets up, David doesn't know what he is going to say, and when he has sat down he doesn't know what he has said." The phrase recalls Disraeli's caricature of Gladstone and Gladstone's style when he described him as "a sophisticated politician, inebriated with the exuberance of his own verbosity and afflicted with an unfortunate predilection for the artificial recollection of misleading statistics." Or the equally graphic remark of an Irishman apropos a certain speaker, of whom he said: "He just opens his mouth and lets it say what it likes."

There was a time when Mr. George made speeches at a place called Limehouse and elsewhere which gave rise to the epithet "Limehousing," as implying undeserved abuse. As for example when he remarked that the British aristocracy was like cheese, the older it grew the rottener it became—or words to that effect. In those days he was a more virulent exponent of democracy—in the literal sense of mob-rule—than his more recent speeches suggest, though possibly no less sincere in his belief in Demos. Possibly he has seen enough of what the British aristocracy has done in this war to modify even his views on their rottenness. In any case his utterances are more often sober.

Curious Omissions.

On August 7th Mr. George made a speech in the House of Commons on the four years of war through which we have passed. From the fact that he used copious notes, and indeed appeared to be reading his speech at times, one assumes that he knew before he stood up what he was going to say, even to the extent of saying that before the war we had a "compact" with France to support her in the event of her being attacked. Why he should have felt called upon afterwards to explain that he intended to say "understanding" is not comprehensible, except on the hypothesis that a true democrat only recognises a signed and sealed "compact," whereas between gentlemen an "understanding" is, if anything, more binding in that it is a debt of honour.

However, the curious thing about Mr. George's "Review of the War" speech was that there were two notable omissions. The first was that he failed to make any mention of the assassination of His Imperial Majesty the Czar of Russia by his traitorous people. Possibly Mr. George's democratic principles forebade him to take official cognisance of the murder of a mere autocrat, but one would rather have expected his Celtic soul to have been stirred by the tragedy to such an extent as to have forced some personal expression on the subject from him, for the true Celt is in essence the least democratic of people and is only amenable to an autocratic leader—as witness the obedience of Scottish clansmen to their chiefs, and the dominance over the Irish of such men as Charles Stewart Parnell and John Redmond.

However, all that has nothing to do with aviation, and is merely interpolated as illustrating the extreme sobriety of Mr. George's utterances in these days. If he progresses thus he may in time become a total abstainer from rhetorical intoxicants, and arrive at being as dull and innocuous as most other members of Parliament.

Out of Mind, Out of Sight.

The really serious omission from his speech is that of any mention of our Flying Services. He paid deserved if inadequate tribute to the Army. He did full justice to the Navy. But he left the Air Force out of it altogether. One does not imagine that the Air Force feels unduly downcast on that account. In fact, probably the Air Force as a whole never noticed the omission, because it never read the speech.

What makes the absence of any mention of aircraft even more remarkable is the fact that Mr. George was one of the very few English politicians who were present at the Great Reims Meeting of 1909, the first occasion on which the public of the world at large had an opportunity of seeing what aeroplanes could really do. The British Army was well represented, as became the high level of intelligence of the pre-war British soldier. There were several British Naval officers there also. But considering their vast numbers and the infinite time at their disposal—judging by the amount of speechifying which they do—British politicians failed to appreciate the situation, for there were very few there.

One doubts whether Mr. George, despite all he saw at Reims, even now appreciates the prime importance of aircraft, of aerial warfare, and of Air Power. Except on that famous occasion when Mr. George made some slight attempt to defend officialdom when Lord Rother-

mere tried and failed to Stellenbosch General Trenchard, one cannot recall that our beloved Premier has ever made a speech concerned principally with aeronautical affairs, and even in the Trenchard Debate he was more concerned about the behaviour of M.Ps. who are also soldiers than about the welfare of the Air Force.

Parallel Omissions.

So far as his other speeches have been concerned, Mr. George's references to the Air Force, to aircraft, and to Air Power have been just about as frequent as his references to the honour of being in the King's Service, to the privilege of serving His Majesty, to loyalty to the King, to the benefits which this country enjoys as a Monarchy, or to the inestimable advantages attaching to a nation which enjoys a Royalist régime. That is to say, one cannot recall any speech by Mr. George which indicates his appreciation of either principle.

Possibly Mr. George and his political friends, being such convinced Democrats, regard the Royal Air Force somewhat in the same way as the members of that earlier Coalition Government, the Directorate of the First French Republic, regarded the gentlemen of France who gave their lives for Louis of Bourbon at the Tuileries and at that other meeting at Versailles of which Mr. George may have read. If so, the Royal Air Force deserves to be congratulated on the compliment. But, from the political point of view, for his own sake, Mr. George has made a mistake in ignoring the Air Force as he has done.

The Root of the Matter.

It is not that the Royal Air Force expects, or would feel particularly complimented by any eulogies of Mr. George's. It is merely that in ignoring the Royal Air Force Mr. George is undermining his own position by distinctly showing that he is not the far-seeing statesman which he would doubtless have us believe him to be. Possibly, from the Imperial and Royalist point of view that is not regrettable, but from Mr. George's point of view it seems bad political strategy.

The real significance of the omission lies in the implication that if Mr. George did not think enough about the Air Force, when preparing his speech, to mention it in his review of the war, he does not think about it at other times to realise its strategic and tactical importance when its claims come before him in his office as head of the War Cabinet. Fortunately we have in Lord Weir one of His Majesty's Principal Secretaries of State who cannot, both because of his strong personality and because of the importance of his position, be ignored when he brings forward a matter of urgency. But, when the head of the Government omits to mention so important a Service on such an important occasion, one begins to wonder whether the War Cabinet even now realises the great part which aircraft should play in this war and the still greater part which it will play in future wars.

Real Air Power.

Numerous as are our aircraft, splendid as is their work at the front, and great as is their superiority over their enemies, they are not even yet influencing the course of the war to their greatest possible extent. If we had all the aeroplanes and seaplanes which could be used, the recent German retreats would have become veritable routs, the German fleet would have been torpedoed in its own harbours, and the manufacturing centres in Western Germany would have ceased to produce munitions.

When such results have been achieved, then, and not till then, can we assume that we have enough aircraft, and that the Navy, the Army, and the Independent Air Force are able, in their respective and entirely distinct fields of operation, to use our Air Power to the fullest possible extent. And even then we should only have enough for this war. If there are any statesmen in the Government, besides the politicians, it is their duty to look ahead to future wars as well, and to lay the foundation for such an Air Force in years to come as will make the British Empire unassailable in any part of the world.

Ludicrous Beliefs.

We have heard much about a League of Nations after the war. Such a notion is purely Utopian. While man remains a predatory animal, universal peace is impossible. Universal peace can only be produced in one of two ways, either by one nation conquering the world and holding it down by brute force, or by a complete revision of the system of breeding human animals. That the first is impossible is shown by the fact that, although England, with all her faults and foolishnesses, is the most successful nation in governing conquered countries, England has not after 700 years imposed peace on Ireland. That the second is equally impossible is shown by the fact that even the most peacefully bred lapdogs will fight when sufficiently provoked—quite apart from the fact that artificial limitations on the breeding of human beings would probably cause a war if any Government or alliance of Governments tried to impose such limitations.

Education is supposed by others to be the great agency for the assurance of peace in the future. This is equally a fallacy, for many of our best fighting men are among the best educated of the community. In fact, the highest education rather tends to prove the salutary effect of war and to show that universal peace is debilitating to the race.

This being so, and realising the certainty of future wars, those who have contrived to obtain places in the Government should, in their own interests and in the interests of their children, see to it that our Air Power is fully developed while there is yet time. For it is certain that when Peace breaks out it will be impossible to screw any money out of the nation for further expansion of the Air Force.

A Business Proposition.

The best vote-catching policy after the war will be "Peace, Retrenchment, and Reform." And retrenchment will mean cutting down expenditure and starving the fighting Services, not, as it should do, re-entrenching ourselves behind universal military service, with a still more powerful Navy, Army, and Air Force for our protection. All our politicians will be out with that election cry, and our foolish people will vote for the man who cries for the abolition of armament.

Therefore our only chance is the formation now of the foundations of a huge Aerial Civil Service, which may be made into a War Service when needed. In this connection, special attention is drawn to a highly important article by an eminent correspondent who prefers to be known for the present as "Medway." In the "Commercial Aeronautics" Supplement in this issue he suggests how a beginning may be made in the direction indicated.

As it is a purely commercial proposition, possibly it may appeal to our precious "Business Government." At any rate, it and sundry other articles which will follow from time to time from the same able writer are commended to the attention of readers, both official and unofficial. One hopes that in this disguise aviation may appear so important to the Cabinet that it may seem worthy of attention in future Ministerial speeches on State occasions.—C. G. G.

THE KING'S MESSAGE.

The following extracts are taken from the letter dated France, Aug. 13th, sent by the King to Field-Marshal Sir Douglas Haig, the British Commander-in-Chief in France :—

"I have inspected detachments of the Royal Air Force. Its prowess and established superiority over the enemy make me proud to be the General-in-Chief of this last creation in the fighting forces of the world.

"It was specially satisfactory that I was able to see the work of the Tank Corps, and thus to form some slight idea of the part which this wondrous and steadily developing invention has played in the present victorious battle."

THE FIVE-ENGINED AEROPLANE.

The following information published by the "Morning Post" on Aug. 19th has been obtained from a well-informed source :—

The report by Sir Douglas Haig last Sunday that a new type of giant aeroplane had been brought down has naturally aroused a good deal of curiosity, on the part of the general public to whom multiple-engined aeroplanes are still a novelty.

This machine was shot down during the night of the 9th inst., behind the British front, and, as is clear from its high power, was designed to carry a considerable weight of bombs. Unfortunately the machine came down in flames, and to make matters worse its load of bombs exploded on striking the ground, with the result that practically no information of a technical or practical value can be derived from the remains.

It is probable, however, that the machine was a modification of the multiple-engined bombers which the Germans have for some time been using for night-raiding purposes.

FRANKFURT AT LAST.

The "Cologne Gazette" of Aug. 17th reproduces the following telegram, which was sent at the instance of the Kaiser to Herr Vogt, the Burgomaster of Frankfurt, on the occasion of the recent air raid on that town :—

His Majesty the Kaiser and King deeply sympathises in the misfortune which has befallen the open town of Frankfurt, as the result of the enemy air attack, which is contrary to International Law and claimed many victims, and requests you to convey to the relatives of those who have thus fallen for the Fatherland, and to the wounded, the sympathy of the All Highest.

GERMAN STRENGTH AND WEAKNESS.

The Paris correspondent of the "Morning Post" writes on Aug. 19th :—

At present, according to data published here, the utmost strength of the German Air Forces on the Western front numbers between 2,600 and 2,700 machines. These consist of 200 bombarding machines, 250 for maintaining liaison with the infantry, 1,100 fighting machines, and 1,100 for reconnaissance work and regulating artillery fire. German losses, according to figures established here involve the renewal of about three-quarters of the total strength every month, as Allied aviators and anti-aircraft guns bring down on an average about 900 enemy planes monthly. About the same number of aeroplanes, according to the admission of the Germans themselves, are lost every month from other causes, such as accidents in landing, destruction in aerodromes, and ordinary wear and tear. This means that the enemy must replace his losses with 1,800 new machines a month, or 60 every day.

These figures explain eloquently the pleadings of the German commanders in various orders that "all missions which are not of first importance from the fighting point of view should be abandoned." Allied supremacy in the air is already a most indisputable factor in the situation.

SEEING IS BELIEVING.

The representatives of the Overseas Press were entertained to luncheon by Lord Northcliffe on Aug. 16th in Printing House Square. Lord Northcliffe, in proposing the health of the guests, said, in the course of his speech :—

If I dilate a little on the American effort it is not because we have many American friends in this room to-day, but because at this space of distance it is difficult for those who have not been in that vast country to realise, to visualise, the effort now taking place there.

Let us take the question of air engines alone. I believe that air engines will largely help to end the war. (Cheers.) Not the combined output of Germany and Austria, not the whole of the British Empire, has the same possibility of quantity production in such matters as air engines as the United States. One of the men who is making these air engines, only one of many, actually produces every day 3,200 motor-cars. The Americans, after certain troubles that we have all had, have now produced their wonderful Liberty motor. I don't know how many thousands will be produced each month. But we shall be told what they do produce. The Americans are fighting a public war, not a secret war. (Cheers.) If I estimate that they can produce 10,000 a month, I do so after having visited a great many places where they are made.

[At the same time one deprecates undue optimism. By this time the Liberty is possibly a very decent aero-engine, but in six months' time it will be out of date, owing to improvements in other designs and the perfection of newer designs. One doubts whether it is yet the equal of the newer Rolls-Royces, and certain others which must be nameless. If it is such a marvel as we have been told, we shall all be very pleased, but it would be a mistake to gamble on it to the exclusion of other makes.—Ed.]

THE PROPER SPIRIT.

Mr. G. Ward Price writes from the Italian front on Aug. 17th as follows :—

Maj. Gabriele d'Annunzio has declined the invitation of important committees at Rome to accept by public presentation to-morrow the gifts of a Roman sword, a crown of laurel, and an aeroplane.

He has written to say that his duty keeps him at the front. "It is a mistake," he says, "ever to dwell upon what has been accomplished; the spirit should centre on what there yet remains to do, and three tons of bombs dropped on the enemy are worth far more than three ounces of eloquence weighed out in Rome."



Official Photograph.

A Fighting Squadron in France.

GERMAN AEROPLANE PARACHUTES.

The "Times" correspondent, writing on Aug. 18th concerning events on a northern sector of the British front, says :—

Although our own authorities have so far not, I believe, approved any device for using parachutes with aeroplanes, the Germans are using them. Two cases are reported from the fighting of the last three days of German airmen in Fokker biplanes, after being shot down by our men, escaping from the falling machines by parachute. Apparently the parachute, which seems to be made of white silk, and is smaller than a balloon parachute, opens automatically by air pressure as the machine rushes downwards and automatically pulls the airman out of his seat. In one case observed the parachute did not seem to begin to work until the machine had fallen at least 2,000 ft.

[As so often happens, the enemy does the obviously sensible thing, while a few people in this country are trying to persuade our Government experts that the same things are worth doing at all. —Ed.]

THE TANKS AGAIN.

Mr. Nevinson, writing in the "Daily Telegraph" of Aug. 15th, says :—

Eye-witnesses tell me that, as the whippets began to encircle Morlancourt and gallop round it, the Germans could be seen scurrying away, the men throwing down their rifles and bits of machine-guns, while the officers ran to and fro trying in vain to check the panic. The German anti-tank guns may occasionally hit the heavy tanks, but against the whippets they appear to be powerless, and the enemy is probably now devising some other means of attempting to check the onset of tanks in general.

[Once more we are having impressed on us the importance of developing our fleets of land battleships. How long is it going to be before the whole of the scandalous mishandling of the "tank" business is exposed? For political purposes the papers waste columns on minor affairs, such as the alleged "Cellulose Scandal," and yet not one, except THE AEROPLANE, has had the common gumption to deal faithfully with the greatest scandal of the war, namely, the fact that here towards the end of 1918, we are no further advanced in the development of our land battleships than we should have been at the end of 1915 if the problem had been tackled by disinterested people who knew their business.—C.G.G.]

"THE QUICKNESS OF THE HAND."

From the "Daily Chronicle" of Aug. 15th :—

Simple mechanism for testing the quickness of response of the hand to a motion observed by the eye is described in the annual report of the National Physical Laboratory.

It was designed at the request of Sir R. Glazebrook, the director, to take the place of the somewhat costly and elaborate clockwork mechanisms used in physiological laboratories for this purpose.

The apparatus consists of a stout thread wound round a pulley, unequal weights being attached to the ends of the thread. The pulley is allowed to rotate under the action of gravity on the weights, and on the appearance of the heavier weight below a vertical screen, the observer immediately completes a circuit, which stops the pulley by the action of small electro-magnets. The distance that the weight falls below the screen before it is stopped is a measure of the quickness of response of the observer, and the time is read on a scale graduated from a knowledge of the downward acceleration of the weight.

For normal persons the time of response is found to be rather less than one-twentieth of a second, and to vary with different observers.

[Which reminds one of the old "three-card man's" pet phrase : —"The quickness of the 'and deceives the heye." In this case the slowness of the hand betrays the eye. Incidentally, the scheme suggests a use for all the old racecourse three-card sharpers. Why not enrol them into a special detachment of the R.A.F., and employ them usefully in training the eye of the aspirant pilot. After a thorough course of the three-card trick and the thimble and pea trick it ought to be impossible for even the nimblest Fokker pilot to deceive the eye of an R.A.F. fighting pilot. The idea is offered gratis to the Director of Training, R.A.F.—Ed.]

DO THEY?

From the "Daily Chronicle" of Aug. 17th :—

Between Wellington Street and Charing Cross about lunch time yesterday a Major-General received and punctiliously returned 57 salutes from men and junior officers. The only escapes he had were when encountering the Navy and the Air Force. Being now an independent arm, the R.A.F. apparently ignore the existence of any outsiders in uniform.

[One doubts the truth of the statement, for one believes that R.A.F. officers and men have been sufficiently well trained while in the Navy or Army, before April 1st last, to know that it is their duty to salute the King's uniform of any Service. If any of them are so ignorant as not to know their duty in this respect one hopes that someone will give them a few lessons in what is done.—Ed.]

THE FRENCH AERIAL MAIL.

The Paris correspondent of the "Daily Telegraph" writes on Aug. 18th :—

A postal service by air has been started for the first time in France between Paris and St. Nazaire. Aeroplanes, carrying mails, left Le Bourget Aerodrome, near Paris, shortly after ten, and one of the two machines, the other having had an accident, reached St. Nazaire at 8.30 p.m., after a stoppage at Le Mans. The total distance from Paris to St. Nazaire is some 250 miles.

This air service will shortly become regular and daily, and a Paris-Nice aerial postal service may soon be started with a possible continuation to Rome. The aeroplanes used are machines which, though quite efficient for this service, are out of date for military use at the front.

The pilots are also men who can no longer be of service at the front. For instance, one is a serjeant-major who has already been ten times wounded in action, and another is a serjeant who escaped from Germany, where he was a prisoner of war. When the aerial postal service becomes regular, the extra charge for letters by it will be 7½d. per letter.

Letters taken by aerial post are at present wrapped in a narrow red band bearing the words "By aeroplane." Very soon the aerial postal services will be working regularly, and a special stamp will be used bearing the effigy of the late Lt. Guynemer.

THE U.S. AERIAL MAIL.

It is reported that Lt. Stephen Bonsal has made a new record air mail flight from Philadelphia to New York, ninety miles, in forty-two minutes. The previous record was forty-five minutes. Bonsal carried 175 pounds of letters.

A CANADIAN EFFORT.

It is stated by the "Times" that letters sent by aerial mail service from Toronto in a recent experimental flight have reached Ottawa in a little under five hours.

A TECHNICAL QUESTION.

At the Mansion House on Aug. 19th, before Alderman Sir John Knill, David Assersohn, metal-worker, St. Bride Street, appeared on three adjourned summonses, alleging that he had committed acts in relation to a gravity petrol tank likely to render it partially ineffective, and making statements and withholding information calculated to deceive persons in the Ministry of Munitions as to its quality.

Mr. H. D. Roome appeared for the Director of Public Prosecutions; Mr. E. Lewis Thomas, K.C., for the defence.

The defendant was given by Savages (Limited) a sub-contract for the supply of gravity petrol tanks for aeroplanes. From the Government's specifications, he made a specimen tank, but it was rejected as being double-grooved, and not riveted. Later on the defendant presented a number of tanks, which were accepted, with one exception. This one was identified as that originally rejected. Rivets appeared to have been put in, but they were "blind rivets," and they fell out when a soldering-iron was applied. Capt. Mansell, captain in charge of the Aeronautical Inspection Directorate of the London District, dealing with the possible consequences that might ensue from the longitudinal seam not being riveted, said that under excessive vibration of the aeroplane in the air and local stresses set up in flying it was quite possible for the tinning and solder to give way, thereby letting loose the petrol.

Mr. E. Lewis Thomas, K.C., for the defence, submitted that no offence had been committed, as the tank had never been supplied. Of the tanks submitted, all but this particular one passed the Government inspectors. The specifications had been altered and varied since the contract was entered into.

Witnesses were called, including the defendant, who testified that gravity tanks were stronger and more efficient when double-grooved and sweated than when riveted. Major Parnell-Smith, Lt. Raven, and Lt. Gough, of the Aeronautical Directorate, spoke to the excellent quality and accuracy of the defendant's work, and to their own preference for double grooves instead of rivets in this class of tank. Lt. Gough said the tank in question was accurate, according to the original specification.

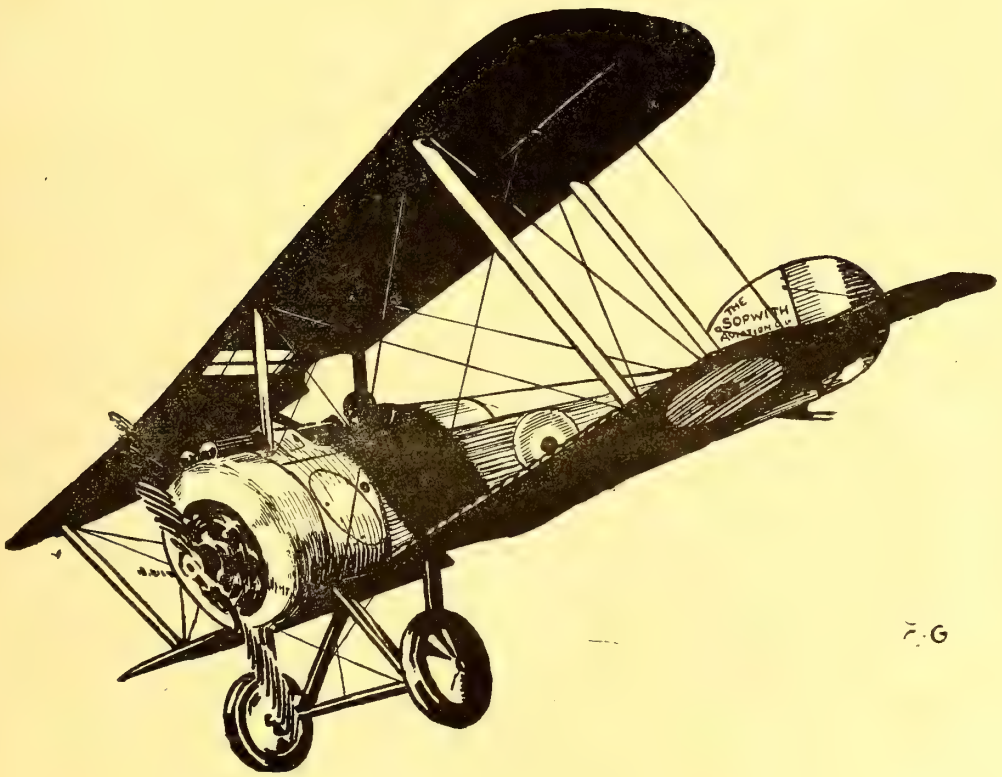
Sir John Knill said that the defendant would have to pay £100, with £21 costs, on each of the three summonses—£363 in all. The prosecution was a very proper one.

Mr. Lewis Thomas said that his client would appeal to the High Court on a point of law and to the Quarter Sessions on the facts.

R.A.F. SPORTS.

On Saturday, Aug. 10th, a technical unit of the Royal Air Force at Coventry held, by permission of Maj.-Gen. J. F. A. Higgins, D.S.O., R.A.F., G.O.C., Midland Area, a sports festival in aid of the Coventry and Warwickshire Hospital. The events and their accompanying prizes were numerous. The local R.A.F. band played selections during the sports, and contributed in no small measure to the pleasure of the occasion.

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GEOFFREY WATSON

FROM THE "LONDON GAZETTE."

ADMIRALTY, Aug. 3rd.

AUG. 7th.—Flt. Comdr. W. H. Wilson, R.N., who relinquished his appt. on acct of injuries received in the Service, to retain his rank.

WAR OFFICE, Aug. 13th.

REGULAR FORCES.—ESTABLISHMENTS.—R.F.C.—MIL. WING.—Instr. in Gunnery.—Graded as an Equipt. Officer, 1st Cl.—Lt. W. W. Moser, Bord. R., Spec. Res., from an Asst. instr. in Gunnery (graded as an Equipt.) Officer, 2nd Cl.), and to be temp Capt. whilst so empld., Feb. 1st.

ROYAL REGIMENT OF ARTILLERY.—Lt. L. S. N. Lewendon, T.F., relinquishes the actg. rank of Capt. on ceasing to comd. an Anti-Aircraft Batt., July 18th.

* * *

The names of the following have been brought to the notice of the Secretary of State for War for valuable services rendered in connection with the war, and, when applicable, an entry will be made in the records of service of officers and other ranks :—

Ludlow-Hewitt, Capt. and Bt. Maj. (T./Brig.-Gen.) F. R., D.S.O., M.C., R.I. Rif., attd. R.A.F.

Roberts, 69753 2nd Air Mech. R., R.A.F.

AIR MINISTRY, Aug. 13th.

R.A.F.—The following temp appts. are made at the Air Ministry :—Staff Officer, 2nd Cl.—Capt. A. J. Hurst, and to be temp. Maj. whilst so empld., July 1st.

Staff Officer, 3rd Cl.—Lt. (temp. Capt.) H. S. Neville, and to retain his temp. rank whilst so empld., May 27th.

The following temp. appts. are made :—Staff Officers, 2nd Cl.—And to be temp. Majs. whilst so empld. :—Capt. G. B. Fraser, April 1st; L. I. Batten (Capt., Glouc. Yeo., T.F.), and is granted a temp. commn. as Capt., April 8th; Capt. K. B. Harbord, vice Capt. (Hon. Maj.) N. M. Martin, July 29th.

FLYING BRANCH.—Capts. to be temp. Majs. whilst empld. as Majs. (A.) M. Henderson, D.S.O., April 1st; H. J. Payn, July 15th; W. E. Young, D.F.C., Aug. 4th.

Lts. (temp. Capts) to be temp. Majs. whilst empld as Majs. (A.) :—F. A. Bates, M.C., July 26th; H. M. Probyn, D.S.O., July 28th; D. Cloete, M.C., Aug. 2nd.

Lt. (temp. Capt.) P. G. N. Ommanney to be temp. Maj. whilst empld. as Maj. (Dir.), June 8th.

Lt. (Hon. Capt.) W. H. S. Aplin to be temp. Maj., but without pay and allces. of that rank while specially empld., Aug. 14th.

Lt. N. G. Fraser to be temp. Capt., but without pay and allces. of that rank, while specially empld., Aug. 14th.

Lts. to be temp. Capts. while empld. as Capts (A.) :—C. H. Sands, April 20th; C. H. Russell, June 6th; J. Mackereth, July 14th; F. H. St. C. Sargant, July 21st; J. Cottle, July 29th; J. M. Glaisher, A. S. Hemming, July 30th; E. Burney, M.C., I. F. Hind, Aug. 1st; B. Ankers, D.C.M., T. Roberts, Aug. 2nd; B. Roxburgh-Smith, Aug. 4th; R. Manzer, Aug 7th.

Lts. (Hon. Capts.) to be temp. Capts. while empld. as Capts. (A.) :—J. R. Swanston, July 25th; N. Senior, Aug. 1st; D. R. Baylis, G. Preen, Aug. 5th.

Lt. (Hon. Capt.) V. R. Scriven to be temp. Capt. while empld. as Capt. (S.), July 17th.

B. A. Wilson (Lt., Brit. Columbia R., C.E.F.) is granted temp. commn. as Sec. Lt. (A. and S.) and to be Hon. Lt., May 25th (substituted for notification in "Gazette," June 28th).

W. E. Surman is granted a temp. commn. as Sec. Lt. (A. and S.), Aug. 5th. The following Flt. Cadets are granted temp commns. as Sec. Lts. (A. and S.) :—E. G. Smith, May 29th; W. W. Van Blaricom, June 15th; F. B. Whittle, June 27th; A. E. Alderslade, L. R. Blacking, J. A. Bell, July 11th; D. J. Avery, R. A. Molin, July 29th; F. Carroll, T. G. Hoskins, July 31st.

The following Flt. Cadets are granted temp. commns. as Sec Lts. (Obsr. Officers) :—C. N. Yelverton, A. E. Griffiths, G. W. Fields, H. Broadberry, July 26th; B. C. Cotter, July 28th; A. C Stevenson, C. Volk, A. G. Wyatt, W. G. A. Bird, H. A. St. G. Burge, K. J. Cadwallader, W. Calloway, A. G. Harris, A. F. Grant, E. Coult, J. H. Marshall, E. A. Hooper, A. R. Sabey, J. M. S. Macpherson, Aug. 1st; W. J. N. Chalklin, H. Davies, R. F. Chapman, Aug. 3rd; H. Clarke, L. G. Gillam, R. M. Foulton, Aug. 7th; B. Troth, M. E. V. Hill, W. Glew, C. Fortune, Aug. 9th; F. Collins, T. J. Calmon, H. J. Andrews, W. M. W. Ayles, L. Anstiss, R. Alcock, W. G. Brown, G. E. M. Browne, A. H. Bell, H. H. Bland, G. C. Charlton, R. E. Clark, H. J. Clements, E. E. Davis, W. L. Dowd. H. P. Flack, H. A. Felton, W. A. Ford, C. R. Fenwicke, C. Holborn, G. A. McGillivray, Aug. 10th; A. Camp, D. R. Hoon, G. A. R. Gregory, P. James, H. J. C. Elwig, R. Nicklin, Aug. 12th.

The following are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—H. A. Wessels (Sec. Lt., E. Yorks R.), H Etterley (temp. Sec Lt., K.R.R.C.), H. S. Maxwell (Sec. Lt., attd. R. W. Surr R.), G. N. Dixon (Sec. Lt., E. Yorks R., Spec. Res.), Aug. 8th; A. R. C. Lett (temp. Lt., E. Lanc. R., attd.), and to be Hon. Lt., T. E. Greer (Lt., Sask R., C.E.F.), and to be Hon. Lt., F. C. Kent (Lt., Sask. R., C.E.F.), and to be Hon. Lt., Aug. 12th.

The following Chief Petty Officers (R.N.A.S.) are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—N. S. Calder, H. T Sayer, June 22nd; W. J. Harris, E. A. Homer, July 27th.

The following Petty Officers (R.N.A.S.) are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—R. Connor, F. T. Eades, T. B. Thomson, June 22nd.

The following Sig. Bo'sns. (R.N.) are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—F. W. Foster, G. R. D. Goadsby, July 27th.

The following Yeomen of Signals (R.N.) are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—A. B. Ball, J. B. V. Clyde, T. W. Hayes, F. C. Jenner, J. B. Prouse, W. S. J. Walne, July 27th.

The following Leading Signalmen (R.N.) are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—C. V. Brealy, A. J. Redman, July 27th.

The following relinquish their commns. on ceasing to be empld. :—Lt. (Hon. Capt.) C. B. Wainwright (Capt., R.F.A.), July 25th; Lt. (Hon. Capt.) R. P. I. Cochrane (Capt., I.A.), Aug. 1st.

The following Lts. resign their commns. to resume their medical studies, and are granted the hon. rank of Lt. :—N. McL. Craig, L. H. McClure, G. R. Nodwell, Aug. 14th

Lt. W. S. Walker relinquishes his commn. on acct. of ill-health contracted on active service, and is granted the hon. rank of Lt., Aug. 14th.

Lt. C. F. Linton resigns his commn., Aug. 14th.

The following Sec. Lts. resign their commns., having been found permanently unfit for further instruction as Pilots or Observers :—B. Benzies, S. H. Baynes, A. E. Hunt, R. N. Pick, S. C. Millett, Aug. 14th.

The Christian names of Hubert Frederick Walker are as now stated and not Harry, as in "Gazette," July 9th.

The Christian names of Franklin Rice Reid are as now stated, and not R. F., as in "Gazette," July 16th.

The surname of Sec. Lt. M. P. E. Harrisson (E. Kent R.) is as now stated, and not as in "Gazette," June 7th.

The notification in "Gazette," June 11th, regarding Sec. Lt. F. S. Hall is cancelled.

ADMINISTRATIVE BRANCH.—The following are granted temp. commns. as Lts. :—T. G. Horn (Capt., York and Lanc. R.), and to be Hon. Capt., June 3rd; J. A. Heather (Qrmr. and Hon. Lt., T.F. Res.), June 14th; A. de M. Beliairs (temp. Lt., Spec. List), July 18th; T. F. Flood (Qrmr. and Hon. Capt., A.V.C.), and to be Hon. Capt., Aug. 1st.

Lts. (A. and S.) to be Lts :—(Hon. Capt.) T. W. M. Cameron, May 7th; F. M. Johnson, June 13th; J. C. Cantrell, July 30th; Lt. C. T. Richards to be Lt., from (O.), Aug. 2nd; Sec. Lt. J. C. Holmes to be temp. Lt. while empld. as Lt., July 17th.

The following are granted temp. commns as Sec. Lts. :—W. B. Fredericks, July 1st; W. H. Hills (late Lt., R.A.M.C.), and to be Hon. Lt., July 26th; F. Allanson, F. Anderson, B. J. Beech, W. Best, J. F. W. Billings, W. T. Daniell, H. W. Davidson, E. G. Davison, T. Gregory, E. Hennen, D. A. Henning, J. S. Hill, A. R. H. Hora, J. E. Hetherington, H. Hayter, W. P. Hotson, H. E. Ilott, J. H. Jones, A. G. J. Littlewood, E. J. Newman, J. Parsons, O. B. Paton, E. J. Peek, J. J. Shuley, R. G. L. Simpson, E. J. Slee, R. W. Stevenson, W. R Smith, F. H. Stapleton, W. C. G. Stokes, A. W. Toms, A. S. Wall, G. C. Wilson, J. W. A. Wymark, Aug. 4th; A. H. Durand, Aug. 7th; A. G. Allan, R. D. Cheveley, W. D. Cooney, J. W. Corble, L. de B Lewis, H. J. Neill, P. C. Barratt, W. Cox, H. G. Hawkes, L. Henri, J. Pritchard, J. Nairn, H. D. Chalke, D. T. Garland, H. W. Turton, R. I. Croucher, R. W. Banks (late Qrmr. and Hon. Lt., W. Yorks R., T.F.), and to be Hon. Lt., Aug. 10th.

The following Sec. Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Sec. Lts. :—W. S. S. Rawson, H. B. S. Reeve, Aug. 14th.

The following Sec. Lts. resign their commns. :—W. F. Hooper, P. F. Parton, Aug. 14th.

The notifications in "Gazettes," July 30th and Aug. 9th, concerning Lt. G. W. Panter are cancelled.

The surname of Lt (temp. Capt.) T. D. S. Purdey is as now described, and not as in "Gazette," July 9th.

TECHNICAL BRANCH.—Substituted for notification in "Gazette," Aug. 6th.—The following are granted temp commns. as Lt.-Cols. :—B. H. O. Armstrong (Maj., Bt Lt.-Col., R.E.); R. A. Kingscote (temp. Lt.-Col., R.E.), April 1st.

A. Struben (late Maj., Gen. List) is granted a temp. commn as Maj., April 1st.

The following temp Capts., R.E., are granted temp. commns. as Capts. :—W. A. Daft, J. F. Hawkins, and to be temp. Maj. whilst so empld., H. T. Humfress, A. M. Taylor, G. Waddell, and to be temp. Maj. whilst so empld., April 1st; G. C. Milnes, M.C. (Capt., York and Lanc. R.), is granted a temp. commn. as Capt., April 1st.

The following temp. Lts., R.E., are granted temp commns. as Lts. :—H. Hooper, J. A. V. Welsh, April 1st.

W. B. Close (temp. Sec. Lt., R.E.) is granted a temp. commn. as Sec. Lt., April 1st.

Capt. (temp. Maj.) A. K. Hall to be temp. Lt.-Col. whilst empld. as Lt.-Col., May 1st.

To be temp. Capts. whilst empld. as Capts. :—Sec. Lt. A. E. Fincher, July 1st; Sec. Lt. W. Cole, July 29th; Lt. G. A. Harrison, July 30th.

Lts. (A. and S.) to be Lts. :—N. B. Harris, May 5th; E. D. Bonisteel, June 16th.

Sec. Lts. to be temp. Lts. whilst empld. as Lts. :—J. W. Jean, July 29th; (Hon. Lt.) J. L. Miles, Aug. 1st.

MEDICAL BRANCH.—A. P. Woollright (late Capt., R.A.M.C.) is granted a temp. commn. as Capt., Aug. 12th.

The following are granted temp. commns. as Lts. :—G. F. H. Bloom, Aug. 10th; H. B. B. Greene, Aug. 12th.

MEMORANDA.—Sir W. R. Lawrence, Bt., G.C.I.E., C.B (Col., Spec. List), is granted a temp. commn. as Maj., and to be Hon. Col., July 4th.

Capt. E. A. Ewart to be temp. Maj. whilst empld. at the Ministry of Munitions, April 1st.

Temp Hon. Lt. W. E. Guttentag to be temp. Hon. Capt., Aug. 1st.

War Office, Aug. 14th.

REGULAR FORCES.—Overseas Contingents.—Canada.—Manitoba R.—The following is secd. for duty with the R.A.F.:—Temp. Capt. W. A. Carrothers, March 11th.

War Office, Aug. 16th.

REGULAR FORCES.—R.F.C.—Mil. Wing.—Flt Comdr.—Temp. Lt. R. S. S. Brown, M.C., Gen. List, and to be temp. Capt. while so empld., Dec. 30th, 1917.

* * *

The King has been pleased to appoint Lt.-Col. (temp. Brig.-Gen. Robert Morsland Groves, D.S.O., A.F.C., R.A.F., to be Companion of the Bath (Military Division), in recognition of distinguished services rendered during the war.

* * *

With reference to the awards conferred as announced in the "London Gazette," dated March 4th, 1918, the following are the statements of service for which the decorations were conferred:—

The Distinguished Service Order.

Temp. Sec. Lt. (temp. Capt.) B. E. Baker, M.C., Gen. List and R.F.C.

While on patrol he engaged nine Albatros scouts, five of these being driven down, two of which he accounted for. On another occasion, whilst leading his flight on an offensive patrol, he dived alone on a formation of six enemy scouts, driving one down out of control. During the course of his patrol work he has brought down ten enemy machines, and his work on all occasions has been magnificent. He is a dashing patrol-leader, and inspires all with the greatest keenness.

Temp. Capt. M. B. Frew, M.C., Gen. List and R.F.C.

On one occasion when leader of a patrol he shot down an enemy aeroplane, two others being accounted for in the same fight. On a later occasion he destroyed three enemy machines in one combat, all of which were seen to crash to the ground. Immediately after this combat he had to switch off his engine and make an attempt to glide towards our lines five miles away on account of his machine having received a direct hit. Owing to the great skill and courage he displayed in the handling of his damaged machine, he succeeded in bringing it safely to our lines. He has destroyed 22 enemy machines up to date.

Temp. Capt. A. H. Peck, M.C., Gen. List and R.F.C.

During two months' aerial fighting he never hesitated to attack the enemy when they were in superior numbers. On one occasion, when piloting a scout, he engaged a hostile formation consisting of four scouts and two two-seaters, completely dispersing them and driving one down out of control. His dash, resourcefulness and skill have been most marked.

The Military Cross.

Lt. (temp. Capt.) D. C. Bell, Middx. R. and R.F.C.

When on observation duty, together with another officer, in a balloon, which was set on fire by an enemy machine, he remained in the burning balloon endeavouring at very great risk to himself to get his companion, who had been rendered insensible by a bullet wound in the head, overboard in his parachute. Being unable to do this, he was compelled to abandon his companion, whose death was subsequently found to have been due to the bullet wound, and to jump from the burning balloon.

Sec. Lt. R. J. Brownell, M.M., R.F.C., Spec. Res.

Within the last three months he has brought down six enemy aeroplanes four of which were seen to come down in flames, the other two falling completely out of control. The dash, gallantry, and offensive spirit displayed on all occasions by this officer are worthy of the highest praise.

Temp. Sec. Lt. P. Carpenter, Gen. List and R.F.C.

Within a period of the last three months he has brought down six enemy machines, four of which were observed to crash to the ground, the remaining two being shot down completely out of control. The offensive tactics pursued by this daring and skilful officer have produced most successful results.

Sec. Lt. (temp. Capt.) M. E. Gonne, R. Fus. and R.F.C.

He is a daring and skilful leader of patrols, and has led his flight throughout a large amount of fighting, often against superior numbers, far over the enemy's lines. He has destroyed five enemy machines.

Temp. Sec. Lt. F. C. Gorringe, Gen. List and R.F.C.

He has destroyed several enemy machines, and has shot down others out of control. On several occasions also he has forced enemy aeroplanes to land, and has shown fine qualities of leadership and a keen offensive spirit.

Sec. Lt. J. S. Green, Gen. List and R.F.C.

He has proved himself to be a skilful artillery pilot, and has frequently carried out observation a long distance over the enemy's lines under heavy anti-aircraft fire. On one occasion he drove down an enemy two-seater machine and forced it to land in our lines. He has set a splendid example to his squadron.

Temp. Sec. Lt. F. Hobson, Gen. List and R.F.C.

He has destroyed several enemy aeroplanes and driven others down out of control. On one occasion he descended to a height of 100 ft and attacked a party of the enemy with his machine gun, inflicting several casualties on them. He has shown splendid resource and determination on all occasions.

Temp. Sec. Lt. G. R. Howsam, Gen. List and R.F.C.

In aerial combats he has destroyed five enemy machines and driven down others out of control, showing splendid courage and initiative on all occasions.

Lt. (temp. Capt.) P. D. Robinson, R.F.C., Spec. Res.

While on a photographic reconnaissance he was attacked by 10 enemy aeroplanes. He handled his machine with such skill that his observer shot down two enemy machines and dispersed the remainder. Though his machine was very badly damaged and almost unmanageable, he continued to take photographs, and finally brought his machine back safely. He has taken part in a large number of photographic reconnaissances and over 70 bomb raids, and has shown the greatest courage and determination on all occasions.

Temp. Sec. Lt. (temp. Capt.) B. J. Silly, Gen. List and R.F.C.

He has led several successful bomb raids and carried out many long-distance reconnaissances. By his skill and determination he has invariably set a fine example to his squadron.

Sec. Lt. A. Wald, R.F.C., Spec. Res.

He carried out a large number of night bomb raids on enemy headquarters, aerodromes, and railways with great success. Many of these flights were carried out in bad weather and at very low altitudes. On one occasion, though he had engine trouble and his radiator burst when he was over the enemy's line, he continued his flight and bombed a railway station from 1,500ft. He set a fine example of determination to his squadron.

Canadian Force.

Lt. F. R. McCall, Inf., and R.F.C.

While observing artillery fire he attacked an enemy scout and destroyed it. He has set a fine example of courage and determination on all occasions, and has rendered most valuable service.

Air Ministry, Aug. 16th.

R.A.F.—The following temp. appts. are made at the Air Ministry:—Staff Officer, 1st Cl.—C. M. Robertson (Hon. Lt.-Col. in Army), and is granted a temp. commn. as Lt.-Col., May 20th.

Staff Officer, 2nd Cl.—W. A. Hunter (Lt., Gen. List) is granted a temp. commn. as Lt., and to be temp. Maj. whilst so empld., June 21st.

Staff Officers, 3rd Cl.—And to be temp. Capts. whilst so empld. if not already holding that rank:—Capt. Hon. A. O. Crichton, vice Lt. (temp. Capt.) A. McR. Moffatt, July 17th; Capt R. A. B. Orlebar, July 20th; Lt. P. J. Cayley, vice Lt. (temp. Capt.) L. H. Jefferson, July 24th; Lt. G. C. Wingrove, vice Capt. Hon. G. St. J. Brodrick, Aug. 4th.

The following temp. appts. are made:—Staff Officer, 2nd Cl.—Capt. Hon. J. H. B. Rodney, M.C., and to be temp. Maj. whilst so empld., July 2nd.

The notification in "Gazette," Aug. 6th, regarding Capt. (temp. Maj.) C. S. Macnab is cancelled.

Staff Officer, 3rd Cl.—Lt. J. C. Barraclough, and to be temp. Capt. whilst so empld., July 8th.

The date of the appt. of Lt. (temp. Capt.) L. Tunks is April 1st, and not as in "Gazette," June 7th.

Flying Branch.—Maj. L. Tomkinson to be temp. Lt.-Col. whilst empld as Lt.-Col. (A. and S.), July 17th.

Lts. to be temp. Capts. whilst empld as Capts. (A.):—(Hon. Capt.) H. J. Wiser, July 18th; G. F. Knight, G. Ross-Soden, J. D. Seal, (Hon. Capt.) H. E. P. Wigglesworth, D.S.C., W. F. Williamson, Aug. 1st; A. C. Heaven, M.C., Aug. 3rd; W. K. R. Liddell, Aug. 4th; F. McQuistan, Aug. 9th; C. E. Pither, S. L. Pope, Aug. 10th; W. Halford, Aug. 11th.

Lt. (Hon. Capt.) D. M. Ballantyne to be temp Capt. whilst empld. as Capt. (A. and S.), Aug. 6th.

The following Flt Cadets are granted temp. commns. as Sec. Lts. (A.):—C. Alexander, D. H. Alexander, G. H. Alexander, L. Ashton, J. Berry, E. R. Corneil, W. Cowan, H. L. Cullen, L. P. Curley, D. A. L. Curtis, M. H. Davis, D. Dorbus, J. U. Eddy, J. F. C. Fisher, E. T. Hamilton, M. Heard, W. H. Hellier, G. Hughes, J. J. H. Hyde, H. N. Hyslop, T. Irtugaroff, J. R. Kirby, G. H. P. Knowler, M. G. Larder, W. M. Laughton, E. Lofquist, J. McColl, C. K. McDougall, C. E. McKeen, H. S. McClelland, J. E. Mauson, E. C. Mathews, H. M. Mosley, J. H. L. Newby, T. R. Nichols, R. T. Norton, C. J. O'Connor, B. J. P. O'Day, H. W. Pepper, T. C. Porteous, H. Ll. Pursel, L. W. Pusey, A. Rankine, K. C. Rappell, H. L. Rigby, A. R. Ross, G. P. Seeley, H. T. Singleton, A. C. Smedley, D. A. Stenhouse, G. W. Tisdale, E. A. Turner, C. H. Wood, T. C. Blencowe, July 11th.

P.F.O. P. V. Tempest (late R.N.A.S.) is granted a temp. commn. as Sec. Lt. (A. and S.), May 5th.

Flt. Cadet G. A. Shelley is granted a temp. commn. as Sec. Lt. (A. and S.), June 21st.

Sec. Lt. T. A. Dickinson (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt. (A. and S.), May 4th (substituted for notification in "Gazette," July 5th).

W. E. Purdin is granted a temp commn. as Sec. Lt. (A. and S.), Aug. 14th.

The following Flt. Cadets are granted temp. commns as Sec. Lts. (A. and S.):—H. W. Clark, C. Norton, July 30th; W. G. Pearson, H. N. Jubb, M. J. Ward, N. Greaves, July 31st; A. Fletcher, Aug. 1st; E. F. Nicholson, W. B. Esplen, Aug. 3rd.

H. J. Collins (Lt., Yorks. Hussars Yeo., T.F.) is granted a temp. commn. as Sec. Lt. (Obsr. Officer), and to be Hon. Lt., April 11th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers):—A. R. Maggs, July 12th; J. E. Foden, B. Chadwick, H. Holmes, R. Fittes, R. Gillim, H. Hollings, J. F. Cavanagh, J. S. Nichol, Aug. 10th.

Lt. C. J. G. Wallace (temp. Lt., Northd. Fus.) relinquishes his commn. on ceasing to be empld., May 13th.

The following Lts. resign their commns. to resume their medical studies and are granted the hon. rank of Lt.:—E. N. Chamberlain, N. P. Henderson, Aug. 17th.

Lt. W. J. Pauli relinquishes his commn., and is granted the hon. rank of Lt., Aug. 17th.

Lt. T. Ure relinquishes his commn. on account of ill-health contracted on active service, Aug. 17th.

Sec. Lt. E. H. Bishop relinquishes his commn on account of ill-health, and is granted the hon. rank of Sec. Lt., Aug. 17th.

Lt. C. R. Henderson relinquishes his commn., having been found permanently unfit for further instruction as Pilot or Obsr., Aug. 17th.

The following Sec. Lts. relinquish their commns, having been found permanently unfit for further instruction as Pilots or Obsrs.:—D. Davis, A. C. Morris, A. S. Quick, Aug 17th.

The date of appointment of Lt. C. H. O. Strettell as temp. Capt. (K.B.) is Aug. 7th, and not as stated in "Gazette," Aug. 9th.

The notification in "Gazette" June 18th regarding Sec. Lt. W. C. Ryder is cancelled.

The initials of Sec. Lt. R. E. Hodgson (Lpool. R.) are as now stated, and not as in "Gazette," July 19th.

The surname of Flt. Cadet Charles James Arthur Guymer is as now stated, and not as in "Gazette," July 30th.

The notifications in "Gazette," Aug. 6th, with reference to the following Flt. Cadets are cancelled:—A. D. Cherry, J. R. Lofthouse.

The initials and surname of Sec. Lt. R. A. Foggin are as now described, and not as in "Gazette" July 12th, describing him as Sec. Lt. A. Faggin.

The notification in "Gazette" July 30th, regarding Sec. Lt. J. A. King is cancelled.

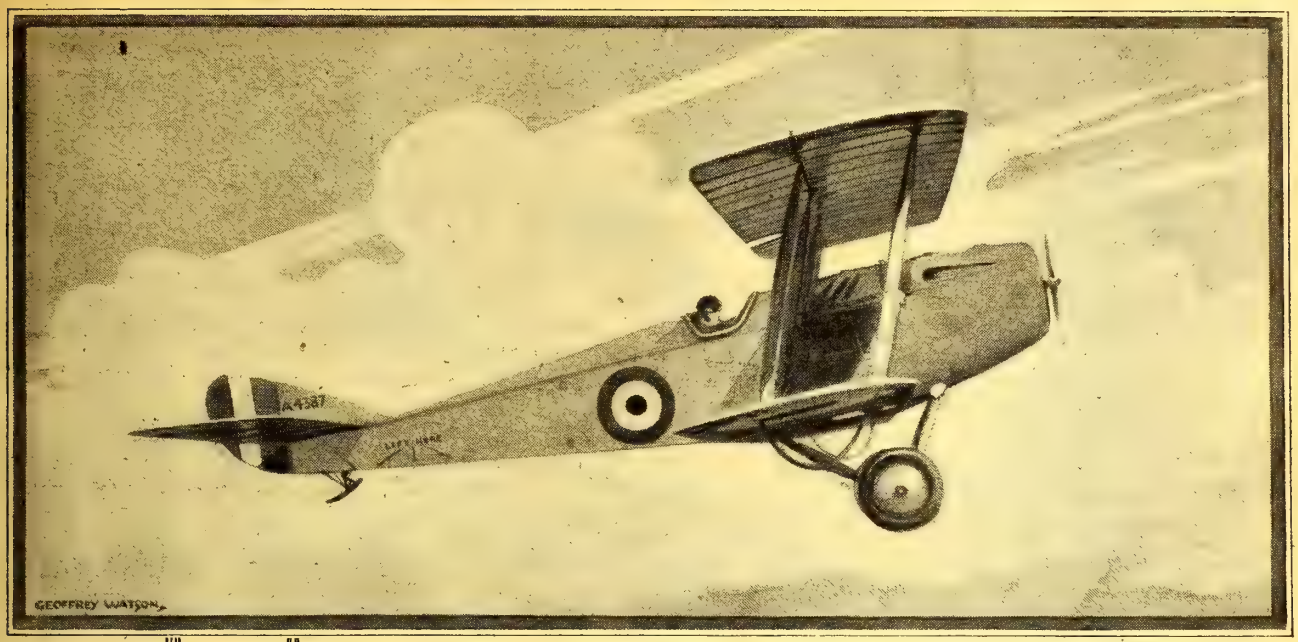
The notification in "Gazette" Aug. 2nd regarding Lt. (temp. Capt.) R. J. Elliott is cancelled.

Administrative Branch.—C. P. Foley (temp. Lt.-Col., Spec. List) is granted a temp. commn. as Maj., and to be Hon. Lt.-Col., April 1st.

Lts. to be temp. Capts. while empld. as Capts:—G. W. Panter from (O.), April 3rd; H. G. Bellamy, July 11th; S. McLaughlin, July 17th; E. Porter, D.C.M., July 23rd; (Hon. Capt.) C. W. Banks, F. R. Wilkins, Aug. 1st.

Sec. Lt. W. A. Glasper to be temp. Capt. while empld. as Capt. Aug. 7th.

The following are granted temp. commns. as Lts.:—W. W. Honywood, M.C. (Lt., Lrs.), W. A. Woodward (Lt., R.F.A., S.R.), May 11th; P. L. Hogan (Lt., Lpool. R.), May 15th; H. Tilley (Lt., Dur. L.I.), June 1st; S. W. Southwood (temp. Capt., Durh. L.I.), and to be Hon. Capt., July 6th; G. Johnstone (temp. Lt., attd. R. Scot. Fus.), July 8th; G. J. Elliott (Qrmr. and Hon. Capt., New Armies), and to be Hon. Capt., July 12th, A. D. F. Mackenzie (temp. Capt., A.P.D.), and to be Hon. Capt., July 16th; K. G. Sampson (temp. Lt., A.S.C.), July 17th; H. J. S. Quarterman (Lt., E. Kent R.), July 19th; C. A. J. Manger (Lt., A. and S. Highrs.), W. A. J. Mitchell (Lt., R.G.A., T.F.), July 26th; J. T. Shaw (Qrmr. and Hon. Lt., R.E.), July 27th; H. T. L. Brittain (temp Lt., Worc. R.), July 29th;





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Head Office
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G. T. Addis (Capt., R. Dub. Fus., S.R.), and to be Hon. Capt., July 31st.

W. F. Duff is granted a temp. commn. as Lt. (Aug. 6th) (substituted for notification in "Gazette," Aug. 9th).

Lts. (A. and S.) to be Lts.:—T. J. Gillow, Aug 7th; N. J. Wenger, Aug. 8th.

Sec. Lts. to be temp. Lts. while empld. as Lts.:—B. S. Higgs, May 1st; W. J. Bray, May 31st; W. J. Brooks, June 20th; J. Burden, H. S. Lewin, P. H. Paul, A. G. Ridgon, H. J. Skingle, Aug. 1st.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts.:—M. Sheriff, D.C.M., April 1st. (Substituted for notice in "Gazette," July 3rd; F. G. Simpkins, May 29th; F. G. A. Terrill, J. M. Russell, June 7th; Sec. Lt R. MacK. Colvill, July 1st.

Sec. Lt. R. F. Hyett (late R.F.C., Spec. Res., on prob.) is confirmed in his rank as a temp. Sec. Lt., Aug. 2nd.

The following are granted temp. commns. as Sec. Lts.:—C. W. Saggs (Qrmr. and Hon. Lt., A.V.C.), and to be Hon. Lt., May 1st; G. M. Ashmore (temp. Lt., attd. Hamps. R.), and to be Hon. Lt.; J. Martin (temp. Lt., M.G.C.), and to be Hon. Lt., June 7th; H. J. Bateman, W. R. Wolsey, July 1st; R. E. Drane, Aug. 10th; H. H. Coffin, F. Dallow, H. V. Lawley, H. Lloyd, W. Pollard, H. E. Rubie (late temp. Sec. Lt., Oxf. and Bucks. L.I.); W. H. Sanderson, F. L. Tomlinson, Aug. 14th.

Sec. Lt. D. G. Cowan resigns his commn., and is granted the hon. rank of Sec. Lt., Aug. 17th.

Sec. Lt. J. F. Dick relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., Aug. 17th.

Sec. Lt. G. T. Simonds resigns his commn., Aug. 17th.

The date of temp. commn. granted to Capt. C. H. Frazier, M.C., is May 11th, and not as stated in "Gazette" May 28th.

The surname of Sec. Lt. A. S. M. Low is as now described, and not as stated in "Gazette," July 9th.

The initial of Lt. T. Parker-Jervis is as now described, and not as stated in "Gazette" August 6th.

The notification in "Gazette" July 9th, concerning Sec. Lt. F. Drake is cancelled.

The notification in "Gazette" Aug. 2nd concerning E. E. Blake is cancelled.

Technical Branch.—The following to be temp. Lt.-Cols. while empld. as Lt.-Cols.:—Maj. C. Defries, May 15th; Capt. (temp. Maj.) J. E. Dixon-Spain, July 17th.

Capt. F. D. Berridge to be temp. Maj. while empld. as Maj., July 17th.

J. F. B. Vidal, M.C. (temp. Lt., R.E.) is granted a temp. commn. as Lt., and to be temp. Capt. while empld. as Capt., April 13th.

Lts. to be temp. Capts. while empld. as Capts.:—F. Knight, May 1st; N. Macgregor, from (O.), July 22nd; F. H. Cooke, H. S. Hollings, A. R. Langton, W. Scott, T. M. Wilson, J. Wingate, Aug. 1st.

Lt. W. J. Reid to be Lt., from (K. B.), June 15th.

Lt. J. P. D. Maciagen to be Lt., from (A. and S.), July 6th.

Sec. Lts to be temp. Lts. while empld. as Lts.:—G. B. Fielding, G. Gilbert, C. W. Mayne, J. A. H. O'Hynes, May 1st; (Hon. Lt.) T. H. Birdsall, C. A. Christmas, G. Dickson, W. Dentith, H. J. L. Greatwich, K. Gray, W. H Harrison, J. E. Lamonby, R Leedal, (Hon. Lt.) E. P. Lyon, A. N. Meier, F. C. North, A. F. Rae, (Hon. Lt.) F. T. Sinclair, A. B. Taylor, H G. Toye, P. B. K. Walsh, J. G. Wright, Aug. 1st.

W. S. Allen (temp. Lt., R.E.) is granted a temp. commn. as Sec. Lt., and to be Hon. Lt., June 29th.

Lt. H. D. Roe to be Sec. Lt., and to be Hon. Lt., from A. and S., May 24th

Sec. Lts. (late Gen List, R.F.C., on prob.) are confirmed in their rank as Sec Lts.:—G. R. Rankine, April 24th (substituted for "Gazette" notice, June 4th; F. W Wheeler, April 29th; A. J. Kurn, May 25th; R. P. Coulter, July 4th; H. Sugden, C. H. Martin, July 27th; W. Bourne, Aug. 1st.

To be Sec. Lts., from Admin.:—G. A. H Wootton, June 1st; E. Hodgson, June 25th; W. E. Burden, July 1st; W. E. Garden, July 3rd; W. F. Bevis, July 10th; H. A. Read, July 13th; J. H. Pattman, July 19th; T. D. H. Bruce, W. G. Fairley, July 24th; W. Littlejohn, Aug. 1st; W. Muir, Aug. 6th.

The date of appointment of Sec. Lt. A. H. Brown as temp. Lt., notified in "Gazette" April 30th, is April 11th.

The date of appointment of Lt. (Hon. Capt.) F. B. Bedford as temp. Capt. is June 17th, and not as stated in "Gazette," July 2nd.

Medical Branch.—H. L. H. Greer (late Capt., R.A.M.C.) is granted a temp. commn. as Capt., July 19th.

The following are granted temp. commns. as Lts.:—N. Homewood, July 12th; R. G. J. McCullagh, S. A. Nield-Faulkner, P. C. Parr, N. Rumboll, Aug. 14th.

Establishments.—Central Flying School.—The following temp. appointments are made:—Instructors (graded for purposes of pay as Majs.) (Flying):—Lt. (temp. Capt.) T. F. Hazell, M.C., vice Maj. R. S. Lucy, May 25th to June 25th); Capt. F. Lindsay, vice Capt. W. R. S. Wilberforce, (June 3rd to July 14th; Capt. P. Huskinson, M.C., vice Maj. A. W. Keen, May 7th to June 17th; Lt. (temp. Capt.) C. C. Morley, vice Capt. P. Huskinson, M.C., June 18th; Capt. W. E. Molesworth, M.C., vice Capt. T. F. Hazell, M.C., June 26th; Lt. (temp. Capt.) T. E. Salt, vice Maj. R. H. Freeman, June 29th

Memoranda.—Capt. A. M. Lowe to be temp. Maj. while specially empld., April 1st.

Capt. F. W. M. Pedley to be temp. Maj while holding a special appointment in the Ministry of Munitions, Aug. 1st.

Hon. A. O. Crichton (Capt., Spec. List) is granted a temp. commn. as Capt., May 1st.

Lt. A. C. Woodman to take rank and prec. as if his appointment bore date, July 17th.

Lt. A. A. Watson (Lt., R.F.A., T.F.) relinquishes his commn. on ceasing to be empld., July 31st.

War Office, Aug. 17th.

Territorial Force.—Yeo.—Royal Horse and Royal Field Artillery.—Capt. A. H. Hulton is secd. for service with R.A.F., April 13th.

* * *

The following are among the decorations and medals awarded by the Allied Powers at various dates to the British Forces for distinguished services rendered during the course of the campaign. The King has given unrestricted permission in all cases to wear the decorations and medals:—

Presented by the President of the French Republic.

Legion d'Honneur.

Croix de Chevalier.

Temp. Capt. G. F. W. Zimmer, Gen. List and R.F.C.

Croix de Guerre.

Maj. G. T. J. Barry, S. Wales Bords and R.F.C.
Capt. F. N. Chadwick, Manch. R. and R.F.C.
Temp. Sec. Lt. J. Day, Gen. List and R.F.C.
Temp. Capt. R. P. Fenn, Gen List and R.F.C.
Lt. E. D. Hall, Northd. Fus. and R.F.C.
Capt. J. H. Hedley, Gen. List and R.F.C.
Temp. Sec. Lt. A. F. McGlashan, Gen. List and R.F.C.
37107 Serjt F. J. Appleton, R.F.C (Scarborough)
26989 Serjt. J. M. Bainbridge, R.F.C. (Accrington).
38336 1st Cl. Air Mech E. Davidson, R.F.C. (Holywell Green).
93775 Cpl. D. McLean, R.F.C. (Lochgilphead, Argyllshire)
973 Serjt. W. R. McCleery, R.F.C. (Swindon).
M2/049533 Pte. A. Richardson, A.S.C., attd. Anti-Aircraft Bty. (Manor Park, E.).
9864 1st Cl. Air Mech. L. G. Routledge, R.F.C Clapham, S.W.)
63901 Serjt. J. R. Wright, R.F.C. (Hendon, N.W.).

Medaille Militaire.

8571 Serjt. G. Avery, R.F.C. (Tenterden).
6999 1st Cl. Air Mech. H. Fraser, R.F.C Birkenhead).
1187 Temp. Serjt.-Maj. A. Gee, R.F.C. (Leicester).
58311 Serjt. K. Gellan, R.F.C. (Finsbury Park, N.).
7813 1st Cl Air Mech. W. P. Pryke, R.F.C. (Buckingham Gate, S.W.)

FROM THE COURT CIRCULAR.

Windsor Castle, Aug. 16th.

Lt.-Col. C. E. H. Rathborne, R.A.F., had the honour of being received by His Majesty at Buckingham Palace.

OFFICIAL COMMUNIQUES.

NAVAL.

Admiralty Communiqués.

Aug. 16th.—During the period Aug. 8th to 15th, Royal Air Force contingents, working with the Navy, have carried out a large number of bombing raids on military objectives with good results.

In all approximately 60 tons of bombs have been dropped on Zeebrugge, Ostend Docks, Varssenaere aerodrome, La Brugoise Works, Bruges Docks, Blankenberghe, and Middelkerke, as well as on many enemy batteries and billets

As a result of the attack on Varssenaere aerodrome, six machines lined up were set on fire, and a fire started amongst hangars on both sides of the aerodrome. Two Gotha hangars were hit and one demolished. Large petrol dumps also were set on fire. Fires were observed to be still burning three hours later.

On the 11th, as previously reported, a German airship was sighted in the North Sea and attacked by one of our machines. After a short engagement the enemy airship fell in flames from a great height

Enemy shipping has also been successfully attacked, and a direct hit was observed on a hostile destroyer, after which other vessels closed round damaged ship. On the return journey, when about eight miles from the scene, a big explosion was seen to occur.

During engagements that have taken place, 16 enemy machines and one captive balloon were destroyed, and 15 machines driven down out of control.

Three of our machines failed to return.

In home waters during the same period continuous anti-submarine, convoy, and hostile aircraft patrols have been maintained by seaplanes, aeroplanes, and airships. Submarines have been sighted and attacked, and mines located and destroyed.

All our machines have returned.

MILITARY.

G.H.Q. Communiqués.

Aug. 13th, 8.20 p.m.—Work in the air was actively carried on in all its branches on Aug. 12th. On the battle front our balloons were pushed forward close behind the line and sent down much useful information

Our artillery and reconnaissance machines were busily occupied all day, enemy aeroplanes were active, and there was much air fighting. Thirty hostile machines were brought down, and seven driven down out of control. One German balloon was shot down in flames

Forty-five tons of bombs were dropped by us during the 24 hours, Péronne and Cambrai stations being heavily assailed.

Twelve of our aeroplanes, including one night bombing machine, are missing.

Aug. 14th, 8.23 p.m.—Fine weather on Aug 13th again enabled a large amount of aerial work to be carried out. The continuous bombing of the Somme bridges, coupled with that of railway lines and junctions, which has taken place night and day since the beginning of the offensive, has interfered with the arrival of the enemy's reinforcements. It has also forced the enemy to employ large formations of scouts to endeavour to protect his communications of such vital importance to his other arms, but concentrations of our machines have effectively dealt with all opposition.

Fifty-eight tons of bombs have been dropped during the last 24 hours on the above objectives—21 by day and 37 by night.

A raid was also carried out on a hostile aerodrome from a low height by British and American squadrons which resulted in six enemy machines on the ground being destroyed and hangars set on fire.

In fighting 21 enemy machines were brought down and 10 driven down out of control.

Six of our machines are missing

Aug. 15th, 8.25 p.m.—On the 14th inst. the enemy's activity in the air decreased somewhat, but our own machines carried out a great deal of reconnaissance and observation work and took many photographs.

Twenty-two tons of bombs were dropped by us during the day, the principal targets attacked being Péronne, Roisel, Engel dump, and Bruges Docks.

In air fighting 22 hostile machines were destroyed and six driven down out of control.

Fifteen of our aeroplanes are missing.

On the night of Aug. 14th-15th the Somme bridges and the railways at Péronne, Douai, and Cambrai were heavily bombed, a total of 30 tons being dropped with good effect.

An enemy night-flying aeroplane was brought down in flames.

One of our night-bombing machines failed to return.

Aug. 16th, 8.50 p.m.—On Aug. 15th the number of combats was not great. Four hostile machines were destroyed by our aviators and two German observation balloons were shot down in flames. Five hostile machines were driven down out of control.

One of our aeroplanes is missing

Much reconnaissance work and a good deal of observation for artillery fire were successfully accomplished during the day.

The total weight of bombs dropped by us in the course of the 24 hours amounted to 22¼ tons. Two German aerodromes were heavily attacked, as well as several of the enemy's dumps and railway connections.

All our night bombing machines returned safely.

Aug. 17th, 8.14 p.m.—On Aug. 16th the weather continued fine, but the enemy's aerial activity was not great. Twelve hostile machines were brought down by our aviators and two driven down out of control.

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Six of our machines are missing. Another enemy machine was brought down during the night.

The hostile aerodromes of Haubourdin and Lomme (both near Lille) were heavily attacked on the mornings of the 16th and 17th respectively by a large number of our machines. Bombs were dropped from a low height, and at the former aerodrome six hangars were demolished and two machines standing in the open were destroyed. Three hangars were destroyed at the latter aerodrome, and at both places the living quarters were heavily fired on and several fires were started. Over 40 tons of bombs were dropped by us during the 24 hours.

Aug. 18th, 8.14 p.m.—Apart from the very successful raid already reported on Lomme aerodrome, there was no feature of special interest in our air work on Aug. 17th. Enemy aircraft were inactive. We destroyed five German machines and a balloon

Three of our machines are missing

Thirteen tons of bombs were dropped by us during the day. Low clouds, rain, and high wind prevented any aerial operations being carried out at night.

Aug. 19th, 8.26 p.m.—Low clouds and high wind restricted work in the air on Aug. 18th. Enemy aircraft were not active. We brought down six hostile machines and shot down a German balloon in flames.

One of our aeroplanes is missing.

Sixteen tons of bombs were dropped by us during the day and the following night on different targets.

War Office Communiqués.

Aug. 14th.—The G.O.C. Palestine reports:—

On the morning of Aug. 8th an extensive bombing raid was carried out by Royal Air Force and Australian units against the enemy camps and establishments in the vicinity of Amman railway station (on the Hedjaz railway, 25 miles east of the Jericho bridgehead), many effective hits being observed and ground targets engaged with machine-guns.

Aug. 18th.—The G.O.C. Macedonia reports:—

Since Aug. 5th we have destroyed four hostile aeroplanes and driven one down out of control.

Aug. 18th.—The G.O.C. Italy reports:—

Since the 9th inst. the Royal Air Force have destroyed eight hostile aeroplanes and two observation balloons

One of our machines is missing.

AIR FORCE.

Air Ministry Communiqués.

The following dispatches have been received from the Headquarters of the R.A.F., Independent Force, in France:—

Aug. 13th.—On the night of Aug. 12th-13th our machines attacked a hostile aerodrome and trains, anti-aircraft batteries, searchlights, and other ground targets with bombs and machine-gun fire.

All our machines returned safely.

On the 13th the hostile aerodrome at Buhl (south-west of Baden) was attacked. The results were unobserved owing to bad visibility.

In the course of fighting in the air one hostile machine was brought down in flames and fell in our lines.

All our machines returned safely.

Aug. 15th.—On the afternoon of the 14th instant our machines successfully attacked the station and sidings at Offenburg (Baden). Direct hits were obtained on the railway. Heavy fighting took place, in which two enemy aeroplanes were destroyed and a further two enemy aeroplanes were driven down out of control.

All our machines returned safely.

Night operations were carried out on the 14th-15th. instant against a hostile aerodrome, blast furnaces, railway sidings, and various ground targets.

All our machines returned safely.

In addition to operations carried out on the 13th inst., an attack was made on Thionville (Lorraine). Two hostile machines were destroyed in the course of fighting, and three of our machines failed to return.

Our aeroplanes were again active during the night of the 13th-14th against aerodromes and railways. Observation was too difficult to observe results.

All machines returned safely.

Aug. 17th.—On the night of Aug. 16th-17th our squadrons attacked four hostile aerodromes and two railway junctions. Visibility was very poor, and observation results was difficult.

In addition to the machines reported missing on the 15th inst., a third machine has failed to return.

Aug. 18th.—On the night of the 17th-18th inst. our squadrons attacked numerous aerodromes, railway junctions, blast furnaces, trains, and other ground targets. Machine-gun fire was freely used against many of the objectives

One of our machines has not returned.

Aug. 19th.—On the night of August 18th-19th our squadrons attacked hostile aerodromes and landing grounds. Various ground targets were also attacked with machine-gun fire.

One of our machines has failed to return.

THE CASUALTY LIST.

NAVAL.

Reported Aug. 19th.

Wounded.—St. Clair-Morford, Capt. A. C., M.C., R.M., attd R.A.F.

Prisoner of War in Germany.—Fellowes, Lt.-Com. P. F. M., D.S.O., R.N, attd. R.A.F

MILITARY.

Reported Aug. 14th.

Previously reported Missing, now reported Killed.—McKim, Sec. Lt. J. N. B., R.F.C.

Reported Aug. 15th.

Canadian Forces.—Killed.—Gordon, Lt. E., E. Ont. R., attd. R.A.F.

Previously reported Missing, now reported by German Government Killed or Died of Wounds.—Eaton, Lt. E. C., Sask. R., attd. R.A.F.

Hall, Lt. R. McK., Que. R., attd. R.A.F

Kelly, Lt. E. T. S., E. Ont. R., attd. R.A.F.

Missing.—Doidge, Lt. E. L., Man. R., attd. R.A.F.

Gilmour, Lt. L. C., Sask. R., attd. R.A.F.

Reported Aug. 17th.

Prisoner in Turkish Hands.—Welman, Sec. Lt. J. B., R.F.C.

Indian Forces.—Wounded.—Tayler, Capt. C. H., I.A.R.O., attd. R.A.F.

Australian Force.—Previously reported Missing, now reported Killed.—Griggs, Lt. A., F.C.

Missing.—McCullock, Sec. Lt. A. F. G., F.C

Previously reported Missing, now reported Prisoner in German Hands.—Nelson, Lt. R. C., F.C.

Reported Aug. 19th.

Australian Force.—Wounded.—McCloughry, Capt. E. J., D.F.C., F.C.

Reported Aug. 20th.

Canadian Force.—Missing.—Orr, Lt. J. R., Cent. Ont. R., attd. R.A.F.

AIR FORCE.

Reported Aug. 14th.

Killed.—Ashton, Sec. Lt. G. G., W. Riding R., attd. R.A.F
Coleridge, Lt. C. G., R.A.F.
Dunbar, Sec. Lt. J. D., R.A.F.
Jupp, Sec. Lt. A. B., R.A.F.
Meff, Sec. Lt. W., R.A.F.
Morrison, Sec. Lt. J. L., R.A.F.
Naish, Lt. J. P., R.A.F.
Raymond, Sec. Lt. G. V., R.A.F.

Wounded.—de Brisay, Sec. Lt. F. E., R.A.F.; Gledhill, Lt. A. D., Suff. Yeo., attd. R.A.F.; Hayes, Lt. E. G., R.A.F.; Ingham, P.F.O, L. H. K., R.A.F.; Johnson, Sec. Lt. B., R.A.F.; Martin, Lt G., R.A.F.

Missing.—Ashton, Sec. Lt. K. H., R.A.F.; Batty, Sec. Lt. H. W., R.A.F.; Benjamin, Lt. A. L., R. Fus. and R.A.F.; Black, Lt. S. McB., R.A.F.; Dennis, Sec. Lt. I. R., R.A.F.; Farrall, Sec. Lt. J. G. M., R.A.F.; Garrity, Lt. W. J., R.A.F.; Melville, Lt. H. T., Sea, Highrs., attd. R.A.F.; Papenfus, Lt. M. T. S., "D.F.C.," R.A.F.; Richie, Sec. Lt. T. M., R.A.F.; Singleton, Sec. Lt. E., R.A.F.; Smith, Sec. Lt. F., K.O.Y.L.I. and R.A.F.; Stagg, Sec Lt. L. W. G., R.A.F.; Stephenson, Sec. Lt. G. H., R.A.F.; Woolley, Sec Lt. F W., R.A.F

Reported Aug. 15th.

Killed.—Boyt, Sec. Lt. H. G. R., R.A.F.
Cartwright, Lt. J. H., R.A.F.
Carruthers, Sec. Lt. G. K., R.A.F.
Gorman, Sec. Lt. R. E., R.A.F.
McSweeny, Sec. Lt. G. B., R.A.F.
Robinson, Sec. Lt. C. E., R.A.F.
Taylor, Sec. Lt. J., Ches. R. and R.A.F.

Wounded.—Atkinson, Sec. Lt. J., R.A.F.; Avery, Lt. G. W. P., R.A.F.; Bailey, Sec. Lt. T., R.A.F.; Bishop, Sec. Lt. A. J., R.A.F.; Brereton, Lt. L. R., R.A.F.; Evans, Sec. Lt. P., R.A.F.; Fraser, P/F/O, D. S., R.A.F.; La Cecilia, Sec. Lt. G. R., R.A.F.; Leake, Capt. E. G. M.C., Manch. R. and R.A.F.; Lecomber, Lt. G. W., R. Welsh Fus. (T.) and R.A.F.; Macdonald, Capt. C. B. R., R.E. and R.A.F.; Pain, Sec. Lt. C. H. S., R.A.F.; Pithey, Lt. C. R., D.F.C., R.A.F.; Ralston, Capt. J. S., M.C., Sco. Rif. and R.A.F.; Rekofski, Lt. S. T., R.A.F.; Ridley, Sec. Lt. H., R.A.F.; Round, Sec. Lt. J. Y., R.A.F.; Taylor, Lt. G. E., Durh. L.I. and R.A.F.

Missing.—Blake, Sec. Lt. A. G. S., R.A.F.; Bragg, Lt. E. L., R.A.F.; Brown, Lt. C. F., R.A.F.; Bullen, Lt. E. H., R.A.F.; Burge, Capt. P.S., M.C., R.A.F.; Carveth, Lt. W. A., R.A.F.; Feurer, Sec. Lt. S. M., R. Berks R. and R.A.F.; Freeman, Maj. R. H., M.C., R.A.F.; Hall, Lt. H. G., R.A.F.; Lewis, Lt. A., R.A.F.; Lindner, Lt. P. E., R.A.F.; Mellings, Capt. H. T., R.A.F.; Penrose-Welsted, Capt. S. R., R. Ir. Regt. and R.A.F.

Reported Aug. 16th.

Killed.—Alder, Sec. Lt. T. G. E., E. Lancs R. and R.A.F.
Bellamy, Lt. H. E., R.A.F.
Cairns, Sec. Lt. A. F., R.A.F
Evans, Sec. Lt. D. R., R.A.F.
Freeman, Sec. Lt. J. A., R.A.F
Sparks, Col. R. H. A., R.A.F
Telfer, Sec. Lt. W. H., R.A.F.

Wounded.—Fitzsimmons, Sec. Lt. H. H., R.A.F.; Gleave, Sec. Lt. J. C., R.A.F.; Goulding, Lt. H. J., R.A.F.; Hallgren, Sec. Lt. W. A., R.A.F.; Hartley, Sec. Lt. P. S., R.A.F.; Heaton, Lt. W. R., R.A.F.; Jones-Evans, Lt. G. S., R.A.F.; King, Sec. Lt. F. E., R.A.F.; Maggs, Sec. Lt. F. G. C., R.A.F.; Marshall, Lt. C. B., Northd. Fus. and R.A.F.; Nixon, Sec. Lt. K., West Riding R., attd. R.A.F.; Parry, Capt. C., R.A.F.; Pickin, Lt. A., R.A.F.; Porter, Lt. A. L., R.A.F.; Rogers, Sec. Lt. R. C., R.A.F.; Thompson, Lt. R. B., R.A.F.; White, Sec. Lt. C. H., R.A.F.

Missing.—Fernald, Lt. Van D., Queen's (R. W. Surr. R.) and R.A.F.; Fisher, Sec. Lt. B., R.A.F.; Gondre, Sec. Lt. J., R.A.F.; Heron, Sec. Lt. F. T., R.A.F.; Kidder, Lt. W. T. G., R.A.F.; Labatt, Sec. Lt. W. H. E., W. Yorks R., attd. R.A.F.; Mannock, Maj. E., D.S.O., M.C., R.F. and R.A.F.; MacVicker, Lt. J. E. C., R.A.F.; Roy, Lt. I. L., R.A.F.; Rudge, Lt. A. E., R.A.F.; Shearer, Sec. Lt. F. J., R.A.F.; Siddall, Lt. J. H., R.A.F.; Sommerfelt, Sec. Lt. A., R.A.F.; Steckley, Sec. Lt. H. B., London R., T.F., attd. R.A.F.; Tussaud, Lt. H. C., R.A.F.; Waddy, Sec. Lt. S. N., R.A.F

Reported Aug. 19th.

Killed.—Barron, Sec. Lt. L., R.A.F
Brisley, Maj. C. E., R.A.F.
Forrest, Sec. Lt. A. C., R.A.F.
Hawkins, Sec. Lt. R., R.A.F.
King, Lt. K. V., R.A.F.
Roberts, Sec. Lt. S. T. C., R.A.F.
Turner, Capt. R., R.A.F.

Wounded.—Cardwell, Sec. Lt. F., R.A.F.; Duncan, Lt. A. T., Gord. Highrs. and R.A.F.; Driscoll, Lt. D. O'Neil, Middx. R. and R.A.F.; Ellis, Sec. Lt. H., R.A.F.; Gale, Capt. D., Lancs. Fus., attd. R.A.F.; Heanley, Sec. Lt. W. E. G., R.A.F.; Latham, Sec. Lt. W. G., R.A.F.; Rowlands, Lt. E., R.A.F.; Salter, Sec. Lt. E. R., R.A.F.; Walker, Sec. Lt. J. M., R.A.F.

Missing.—Armstrong, Sec. Lt. W. A., R.A.F.; Barlow, Capt. R. T., R.A.F.; Coghill, Lt. F. S., R.A.F.; Henderson, Sec. Lt. W. R., R.A.F.; Houston, Lt. C. T., R.A.F.; Irwin, Lt. R. V., R.A.F.; Laurie, Sec. Lt. K. S., R.A.F.; McElroy, Capt. G. E. H., M.C., D.F.C., R.A.F.; Scot, Sec. Lt. L. H. G., Ox. and Bucks L.I., attd. R.A.F.; Parsons, Sec. Lt. L. H., R.A.F.; Stent, Sec. Lt. H. R., W. Rid. R. and R.A.F.; Stephenson, Lt. W. S., M.C., R.A.F.; Struben, Lt. H. M., R.A.F.; Symons, Lt. K. W. A., R.A.F.; Travers, Sec. Lt. G., R.A.F.; Vorster, Sec. Lt. W. L., R.A.F.; Watkins, Sec. Lt. W., Welsh R., attd. R.A.F.; Wilson, Sec. Lt. N, R.A.F.

Second List.

Killed.—Bayetto, Capt. T. P. H., R.A.F
Davidson, Lt. R. J., R.A.F.
Easton, Sec. Lt. P. R., R.A.F.
Jordan, Lt. C. H., R.A.F.
Kelly, Sec. Lt. J., R.A.F.
Lugard, Capt. E., King's Own R., attd. R.A.F.
Thomas, Capt. O. V., R.A.F.

Wounded.—Boyce, Lt. J. M., R.A.F.; Cooper, Lt. M. L., R.A.F.; Crump, Sec. Lt. F. F., R.A.F.; Davis, Lt. A. J., R.A.F.; Ellis, Sec. Lt. R. W., Northd. Fus. and R.A.F.; Grant, Capt. R. H., R.A.F.; Mackintosh, P/F/O/ F. H., R.A.F.; Moore, Sec. Lt. J., Northn. R.,

(Continued on page 687.)

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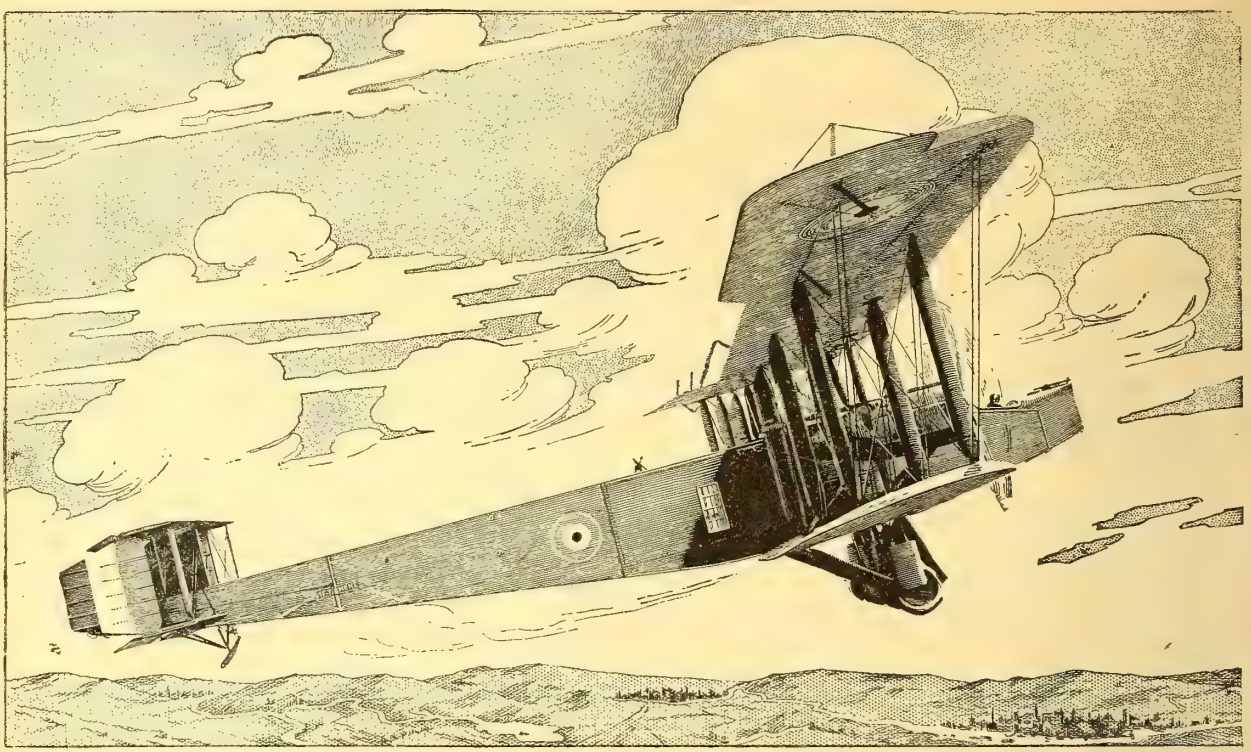
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THE PFALZ BIPLANE D.III.

The July edition of "L'Aèrophile" contains an interesting article, signed P. de G., on the Pfalz single-seater chaser D.III., from which the following notes are translated:—

It was towards the end of March, 1918, that the first specimens of the German Pfalz biplane D.III. were captured.

A year earlier, at a similar period, Allied aviators met with the Albatros chaser D.III., which in modified form constitutes the Albatros D.V. It is to this last machine that the Pfalz D.III. offers the greatest resemblance in its arrangement, and there is no doubt that the constructors were inspired by it.

The principal dimensions of the Pfalz D.III. are as follows:—

Span of upper wing	9.41	metres.
Span of lower wing	7.80	,,
Total length	7.06	,,
Height	2.67	,,

Wings.

The planes are unequal in span and chord, and staggered greatly forward, namely 0.43 metres. The planes are not swept-back. The lower planes have a slight dihedral angle. The trailing edges of the wings are rigid.

The Upper Plane is trapezoidal in form, with rounded corners. The trailing edge is cut away in the centre, the recess being shallow from back to front (0.225 metres) but very wide (1.65 metres).

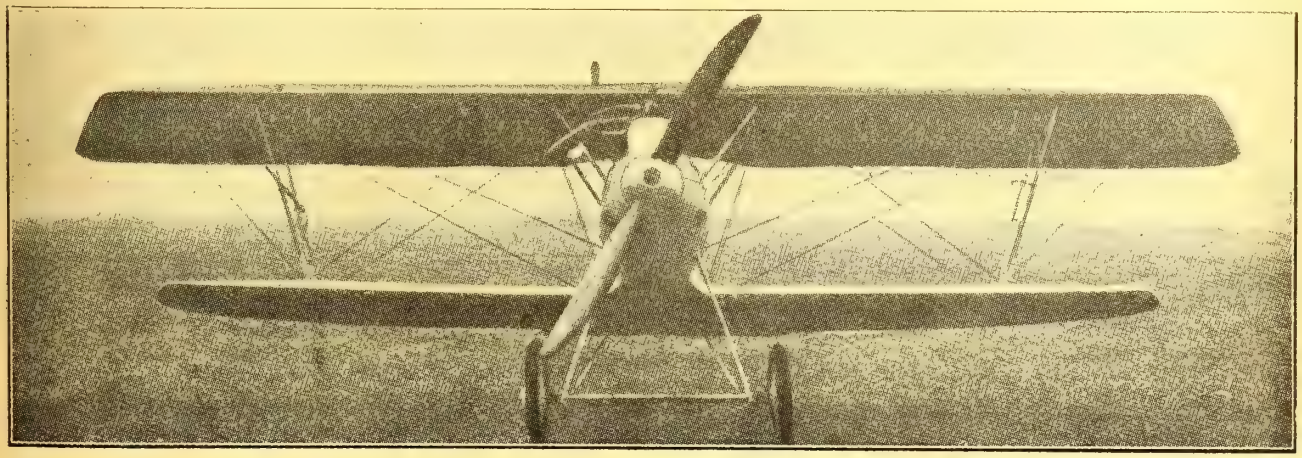
At the ends of the upper plane are balanced ailerons. The plane is constructed in one piece, and the chord is uniformly 1.65 metres. Along the whole length are 12 ribs made of wood, and spaced 0.34 metres from one another. The incidence of the seventh rib is 3¾ degrees. Between each pair of ribs are three strips of wood strengthening the leading edge, the middle of these runs back to the rear spar, while the two others, which are very small, stop at the front spar.

The two main spars are built of spruce. They are hollow rectangular boxes. The front spar is 0.20 metres from the leading edge, and the rear spar 0.65 metres from the trailing edge. It follows, therefore, that the distance between the axes of the spars is 0.80 metres. The position is maintained by four interposed steel tubes. The structure is internally braced by crossed piano wires.

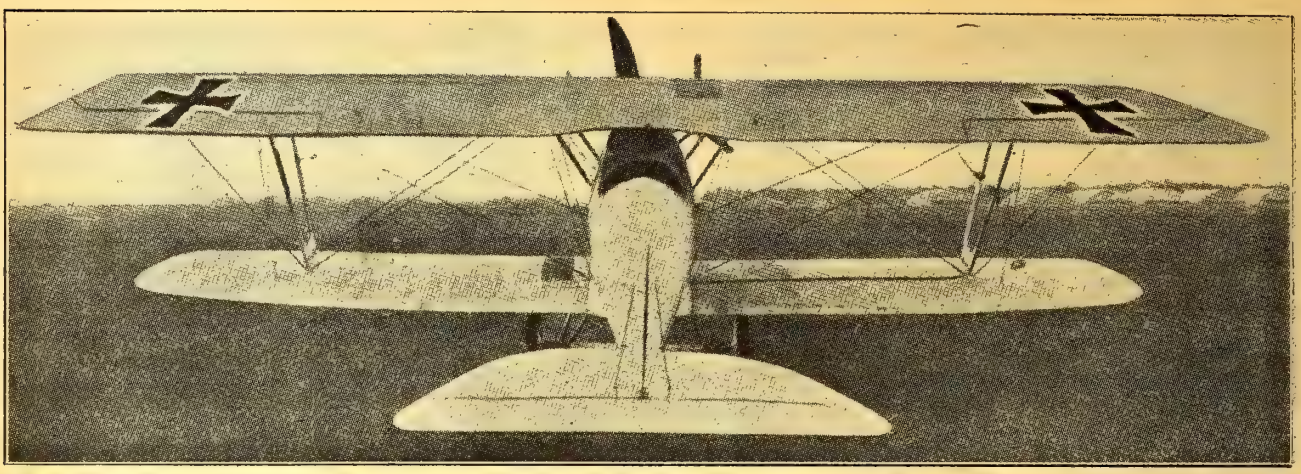
In the thickness of the centre section of the wings is found a

The following table permits readers to compare the points of the fighting aeroplanes most in favour with the enemy:

	ROLAND.	ALBATROS.				PFALZ.
	D II.	D.I.	D.II.	D.III.	D.V.	D.III.
Span of Upper Wing	8 90 m.	8 60 m.	8.43 m.	9 03 m.	9. m.	9.41 m.
Span of Lower Wing	8.50 m.	8.05 m.	8. m.	8.75 m.	8 70 m.	7.80 m.
Length	6 95 m.	7.30 m.	7.30 m.	7.33 m.	7.30 m.	7.06 m.
Height	2.95 m.	2.90 m.	2.65 m.	2.85 m.	2.45 m.	2.67 m.
Engine	Mercédès 160 h.p.	Mercédès 160 h.p.	Mercédès 160 h.p.	Mercédès 160 h.p.	Mercédès 160 h.p. modified.	Mercédès 160 h.p. modified.
Total Carrying Surface	23 sq. m.	25 sq. m.	24.50 sq. m.	21.13 sq. m.	20 sq. m.	22.70 sq. m.
Weight Empty	660 kg.	—	—	684 kg.	660 kg.	717 kg.
Total Weight	827 kg.	—	—	924 kg.	885 kg.	935 kg.
Weight per square metre	35.9 kg.	—	—	43.5 kg.	44.25 kg.	41.18 kg.
Weight per H.P.	5.1 kg.	—	—	5.3 kg.	5.55 kg.	5.8 kg.



A Front View of the Pfalz Single Seater Fighter. Type D.III.



A Rear View of the Pfalz D.III. biplane showing clearly the shape of the tail.

petrol tank on the left, and the radiator on the right. This section is heavily reinforced with plywood.

The ailerons are balanced and upturned, and their chord is 0.4 metres at the hinge, and 0.73 metres at the broadest part of the balanced portion. They are 2.265 metres long.

Control is transmitted from the control pillar to the levers of the ailerons by 3 mm. cables passing through the interior of the lower wings.

The Lower Planes are trapezoidal in form, as are the upper planes, and the ends are very rounded and upturned. Their chord is 1.2 metres.

At a point 0.2 metres from the leading edge is found the front main spar, the rear spar is 0.5 metres from the trailing edge, and the distance between the spars from axis to axis is 0.5 metres, as compared with that of 0.8 metres in the upper plane. The difference in this distance is caused by the difference in the chords of the wings.

On each wing are 10 wooden ribs, spaced 0.35 metres apart. At the seventh rib, that is to say, near the base of the interplane strut, the incidence is 3 deg.

At 12 cm. from the extremity of the first rib on the lower left-hand wing is a strip of stamped metal, 24 cm. wide, resting on the two main spars and forming a footboard.

The system of false ribs and compression tubes is the same as that in the upper plane.

The lower planes are attached to shoulders constructed on the lower walls of the fuselage.

The gap between the planes is 1.415 metres in line with the fuselage, and 1.375 metres at the base of the interplane struts, so the dihedral is not very apparent.

The cabane slopes outwards and upwards.

The struts of the cabane, and those between the planes, are very large and thick, and are formed of streamline timber. They are of a U-shape, arranged upside down in the cabane struts, and the right way up in the plane struts, the cross-pieces, which unite the legs of the U in the cabane struts, being found above, whereas those which unite the legs of the interplane struts are below.

All these struts are fixed with the aid of cup-joints, and carry sheet metal ferrules at their four points of attachment.

Viewed from the front the interplane struts are inclined outwards, the distance between the tops of the interplane struts being 0.318 metres greater along the planes than their bases. The distance between their front and rear branches corresponds to the distance between the main spars in the upper plane, to which they are attached. Their attachment to the lower planes is different, and is made to the piece of timber which unites the two main spars.

These two lower points of attachment are 0.3 metres apart from axis to axis.

Bracing.—The plane-bracing is attached to the sides of the fuselage.

Two 4 mm. cables run from the summit of the cabane to the shoulders on the lower part of the fuselage.

Two 4 mm. cables run from the top and bottom respectively of the front interplane strut, one to the front leg of the undercarriage, and the other to the summit of the front cabane strut.

Two other 4 mm. cables run from the top and bottom respectively of the rear interplane strut, the first to the front of the shoulder of the fuselage, the second to the summit of the rear cabane strut. These cables have a metal connection at their intersection.

A supplementary cable, 3 mm. diameter, completes the structure of the wings, and connects the base of the interplane struts to the end of the upper plane. Its point of attachment is found outside these struts, 0.81 metres from the summit.

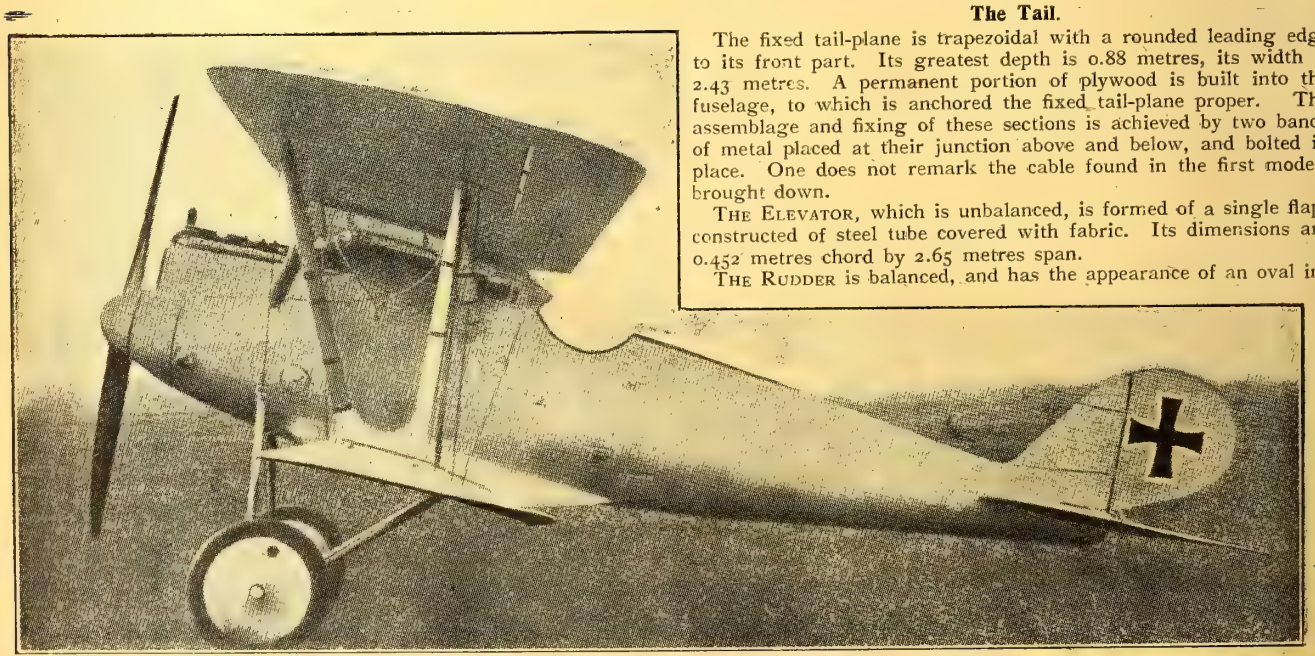
All these cables are connected to lugs fixed on the spars, and are independent of the interplane struts.

The Tail.

The fixed tail-plane is trapezoidal with a rounded leading edge to its front part. Its greatest depth is 0.88 metres, its width is 2.43 metres. A permanent portion of plywood is built into the fuselage, to which is anchored the fixed tail-plane proper. The assemblage and fixing of these sections is achieved by two bands of metal placed at their junction above and below, and bolted in place. One does not remark the cable found in the first models brought down.

The Elevator, which is unbalanced, is formed of a single flap, constructed of steel tube covered with fabric. Its dimensions are 0.452 metres chord by 2.65 metres span.

The Rudder is balanced, and has the appearance of an oval in-



A Side View of the Pfalz D.III. Note the curious arrangement of the interplane struts.



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clined towards the rear. It is situated entirely above the elevators. Its structure is metallic.

The fixed fin, of trapezoidal shape, is formed of plywood, and is moulded bodily into the fuselage. The controls are worked by 3 mm. cables, which pass through the interior of the fuselage, and do not come out until they are within one metre of its rear extremity.

The Fuselage.

The fuselage of the Pfalz D.III. is of monocoque type, oval in section, and it tapers vertically towards the tail.

Its section is very large at the portion between the wings, but very narrow in front and towards the rear, presenting a remarkable likeness to a torpedo.

It is entirely constructed of bands of plywood, 9 cm. wide, and it terminates on the upper side with a ridge. It is apparently constructed in two halves on moulds (like the early Deperdussins of Mr. Koolhoven's design), after which the whole structure is covered with thin fabric and painted. The fuselage is camouflaged in silver grey.

Inside the fuselage are found eight very thin cross partitions, which divide up its whole length. There are also eight small longerons; one in the ridge along the back, three on either side, and one at the base.

better grip when lifting the machine than would the bare fuselage.

The tail-skid of special section is constructed of ash, and is reinforced by metal where it touches the ground. The springing of the tail-skid is effected by elastic cord.

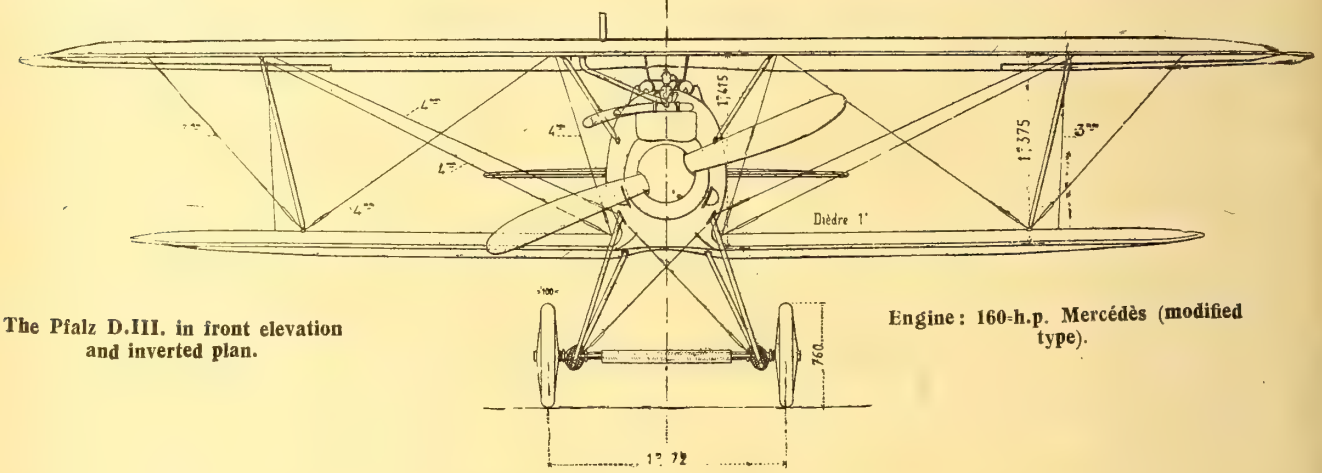
The airscrew in common use is an "Axial" 2.82 metres in diameter, placed underneath a revolving pot, or "casserole." On certain other Pfalz aeroplanes has been found the "Heine" airscrew, 2.78 metres in diameter, or yet again the "Imperial" airscrew 2.70 metres diameter.

The Engine.

The engine is a modified 160-h.p. Mercédès, equipped with double ignition, and a horizontal exhaust pipe on the right-hand side. The form of the exhaust pipe varies. In certain types it is a cornucopia, and the emission of gas is made in front of the first cylinder. On other machines the end of the exhaust pipe is taken in the reverse direction, the exhaust being emitted, instead, at the rear of the last cylinder.

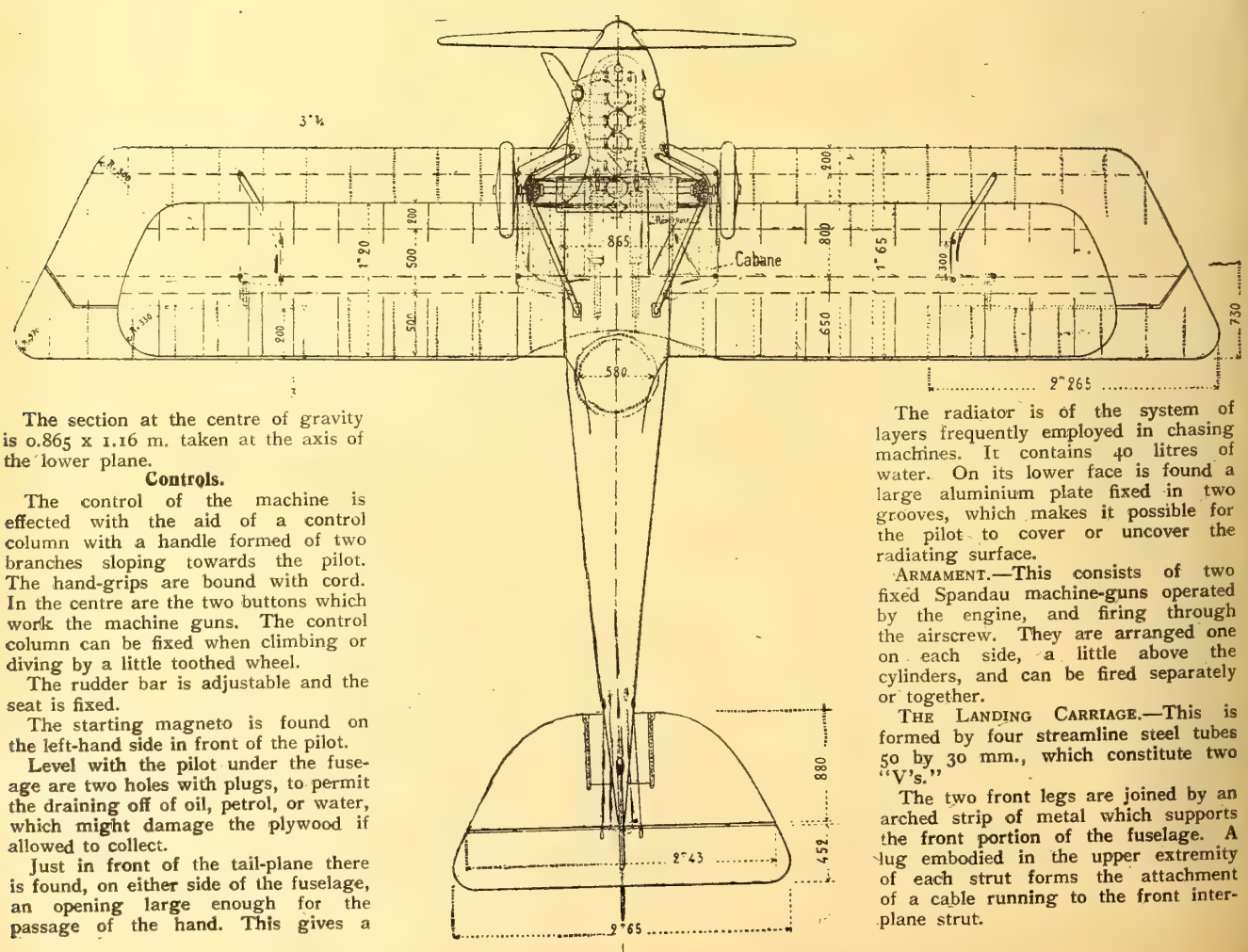
The engine cowl leaves the upper part of the cylinders uncovered.

The petrol supply is provided by a main tank of about 70 litres capacity, placed in front of the pilot on the floor of the machine, and by a tank built into the upper plane with a capacity of 40 litres. In all, 110 litres of petrol are carried and 15 litres of oil.



The Pfalz D.III. in front elevation and inverted plan.

Engine: 160-h.p. Mercédès (modified type).



The section at the centre of gravity is 0.865 x 1.16 m. taken at the axis of the lower plane.

Controls.

The control of the machine is effected with the aid of a control column with a handle formed of two branches sloping towards the pilot. The hand-grips are bound with cord. In the centre are the two buttons which work the machine guns. The control column can be fixed when climbing or diving by a little toothed wheel.

The rudder bar is adjustable and the seat is fixed.

The starting magneto is found on the left-hand side in front of the pilot.

Level with the pilot under the fuselage are two holes with plugs, to permit the draining off of oil, petrol, or water, which might damage the plywood if allowed to collect.

Just in front of the tail-plane there is found, on either side of the fuselage, an opening large enough for the passage of the hand. This gives a

The radiator is of the system of layers frequently employed in chasing machines. It contains 40 litres of water. On its lower face is found a large aluminium plate fixed in two grooves, which makes it possible for the pilot to cover or uncover the radiating surface.

Armament.—This consists of two fixed Spandau machine-guns operated by the engine, and firing through the airscrew. They are arranged one on each side, a little above the cylinders, and can be fired separately or together.

The Landing Carriage.—This is formed by four streamline steel tubes 50 by 30 mm., which constitute two "V's."

The two front legs are joined by an arched strip of metal which supports the front portion of the fuselage. A lug embodied in the upper extremity of each strut forms the attachment of a cable running to the front interplane strut.

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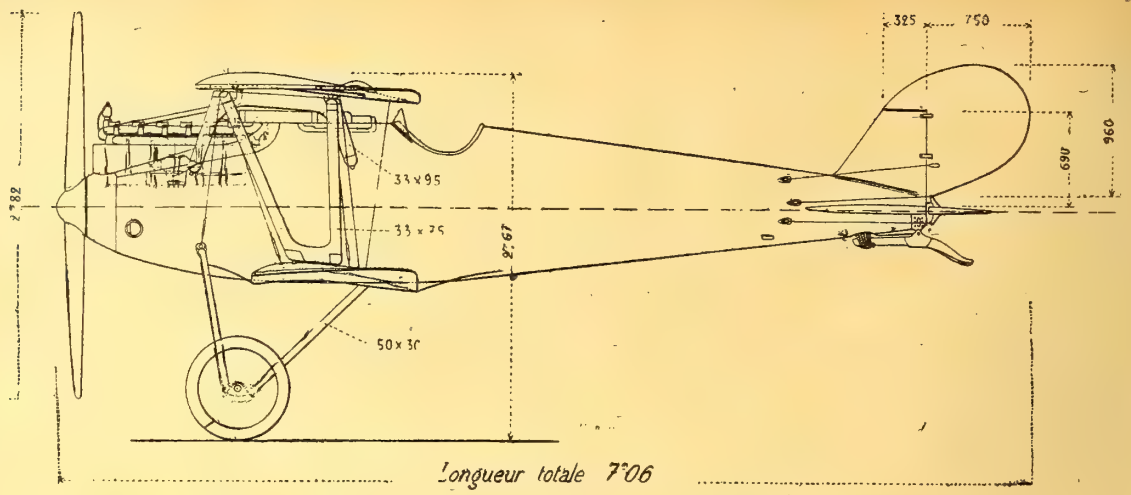
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There is one engine which General Brancker believes has demonstrated the possibility of such an exploit. It is the Rolls-Royce, an English motor . . . . The plane making the transatlantic voyage would carry two engines and two tanks. . . . It would be possible for the Rolls-Royce engine to make a high speed . . . . He declared that the Rolls-Royce is absolutely reliable, and the flight should be a certainty with it."

Extract from "New York Tribune," June 22, 1918

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The Pfalz D.III. biplane shown in side elevation.

The steel axle, 53 mm. diameter, is placed between two wooden pieces. A movable and hinged plate covers the whole arrangement, and acts as a streamline fairing. The suspension is rendered elastic with the aid of metal springs covered with fabric, arranged like rubber cord.

A metal cable limits the travel of the axle.

The track of the wheels is 1.72 metres. The wheels are fitted with Continental tyres 760 by 100 mm.

Considering everything, the Pfalz D.III. possesses neither remarkable characteristics nor advantages. It is merely necessary to refer to the list of German fighting aeroplanes, in which appears the Albatros D.V., which it most nearly resembles. It possesses about the same speed of 180 kilometres per hour near the ground, but should lose less speed at high altitudes.

On the other hand, its rate of climb is lower than the average. Its ceiling is in the neighbourhood of 5,500 metres (about 17,900 ft.) Its tank capacity permits of a flight of about 2¼ hours.

NEW GERMAN AEROPLANES.

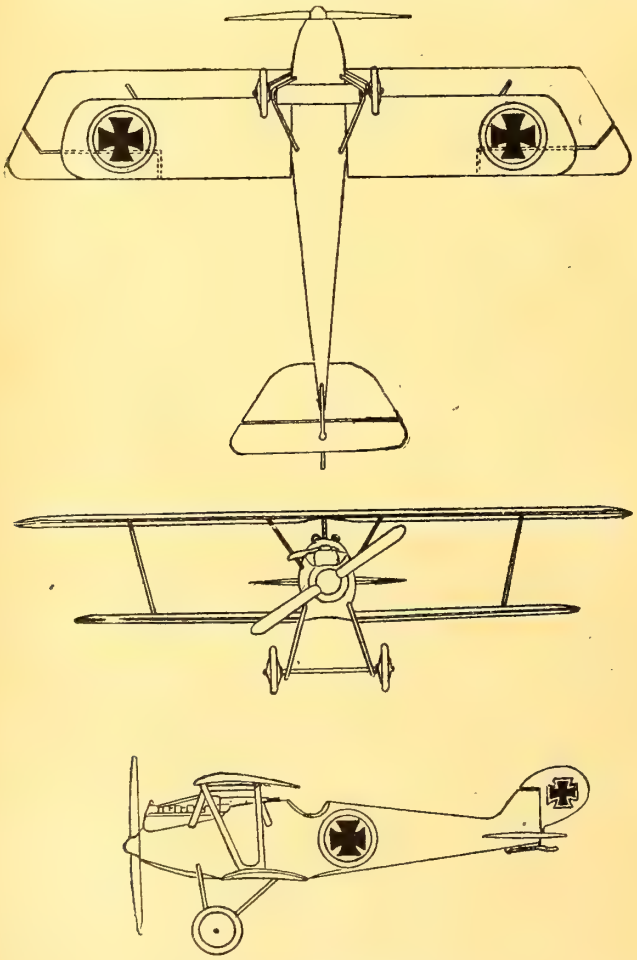
The following illustrated descriptions are taken, with acknowledgments, from "L'Aérophile" for July 15th.

The writer of the article in his prefatory remarks says that there is every evidence that the German command, wishing to obtain at any price a speedy decision on the Western Front, seeks numerical superiority in men, guns and aeroplanes.

In order to obtain such numerical superiority in the air the enemy has called into use old models of aeroplanes such as the Rumpler C.III., which has been the most frequently observed, the Albatros C.III., the L.V.G., and so on.

These machines, which had almost disappeared from the Western Front, have probably been brought back from the Russian Front.

Nevertheless there is evidence of the presence on the Western Front of many biplanes of new types, several specimens of which have been captured. One may mention the Pfalz D.III., the Fokker D.VII., both single-seater fighters; the Halberstadt C.II., a two-seater for general use; and again the giant bombardment aeroplane (Riesenflugzeug) destroyed in the region of Betz.



The Pfalz Single Seater Fighter.

THE PFALZ SINGLE-SEATER FIGHTER.

General Specification.

Engine: 160-h.p. Mercédès (modified).

Span of upper plane	9.41	metres
Span of lower plane	7.80	,,
Length	7.06	,,
Height	2.67	,,

The Wings.—The planes are unequal in size, trapezoidal, staggered forwards, and with a dihedral to the lower planes only.

The upper planes have balanced ailerons.

The lower planes are narrower, with slightly more rounded corners.

There is one pair of interplane struts on each side of the fuselage. These struts recall those of the Albatros D.III., but they do not join together at their base. Viewed from the front they slope outwards.

The Tail.—The tail plane is trapezoidal, rounded towards the front.

The balanced rudder is oval, and is preceded by a trapezoidal fixed fin; it is situated above the tail planes.

The Armament.—This consists of two machine-guns firing through the airscrew.

The Fuselage.—This is oval, tapering rearwards to a vertical knife-edge.

THE FOKKER SINGLE-SEATER D.VII.

General Specification

Engine: 160-h.p. Mercédès (modified).

Span of upper plane	8.93	metres.
Span of lower plane	7.75	,,
Total length	7.02	,,
Height	2.80	,,

Wings.—The planes are of unequal span and chord, rectangular, with slightly convex ends. They are not swept back and are very much staggered forwards.

There is a dihedral angle to both the upper and lower planes. The upper surface of the plane is straight, and the dihedral is formed by the diminution of the thickness of the plane itself from the centre to the wing tips, thus forming a species of cantilever.

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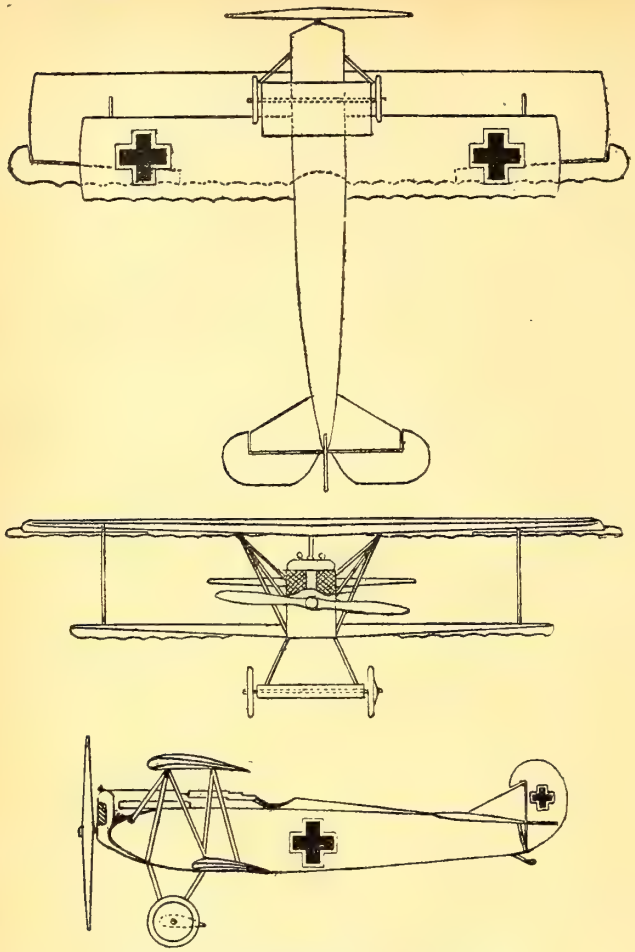
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The Fokker Single Seater. Type D.VII.

There are balanced ailerons which project past the wing tips on the upper plane. The cabane has eight members, six of which are visible from the front.

There is an arrangement of three interplane struts forming an "N" on either side of the fuselage.

The Tail.—The elevators are balanced. There are two flaps, cut away in the centre to clear the rudder, the balanced ends of each flap projecting past the sides of the fixed tail plane.

The rudder recalls that of the old Fokker, but is higher and is cut away in front to provide for a balanced portion above and in front of the triangular fixed fin.

The fuselage terminates in a vertical knife-edge.

Armament.—Two machine-guns firing through the airscrew.

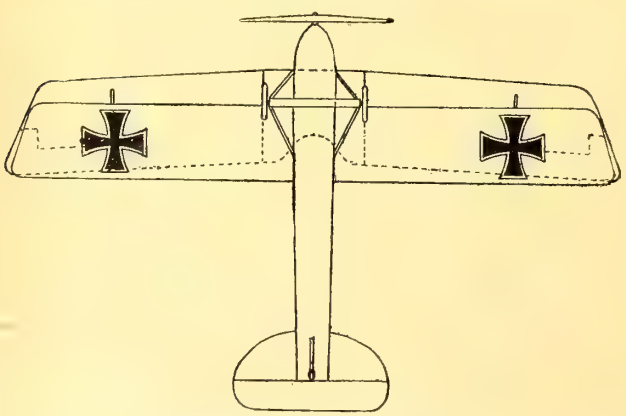
The streamline fairing on the axle of the landing carriage is very deep and forms a lifting surface.

THE HALBERSTADT C.II.

General Specification.

Engine: 160-h.p. Mercédès.

Span of upper planes	10.84	metres.
Span of lower planes	10.64	,,
Length	7	,,
Height, about	2.75	,,



The Halberstadt. Type C.II.

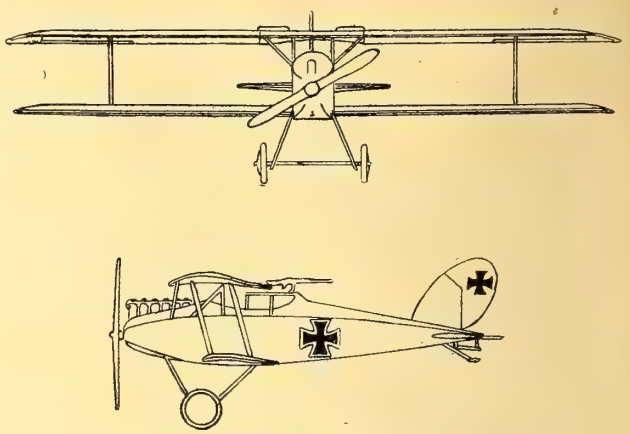
Wings.—The planes are practically equal, trapezoidal, with a dihedral, staggered forwards.

The upper planes only are arrow-shaped—or swept back—and have ailerons which are balanced.

The trailing edge is cut away in the centre section, which is not arrow-shaped.

The lower planes are less in chord. On either side of the fuselage is a pair of interplane struts, sloping to correspond to the staggering of the planes.

The Tail.—The elevator flap is not balanced. The tail and elevator planes together form an oval flattened toward the rear edge.



The Halberstadt. Type C.II.

The rudder is tall, balanced, is placed above the fuselage, and together with the fixed fin has the appearance of an incomplete oval, sloping rearwards.

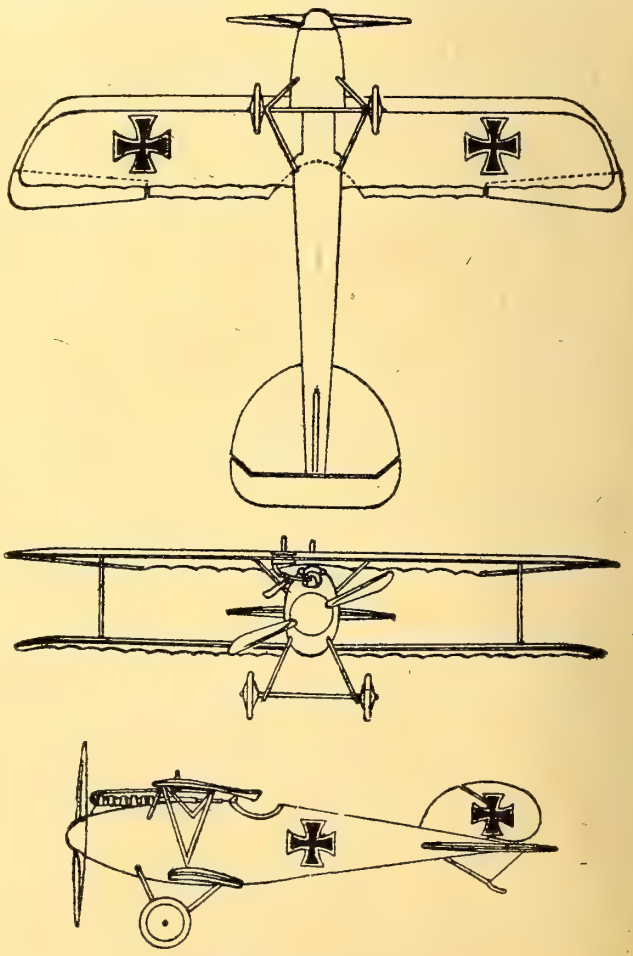
Fuselage.—This terminates in a horizontal knife-edge.

Armament.—This consists of two machine-guns, one firing through the airscrew, the other mounted on a movable turret at the rear.

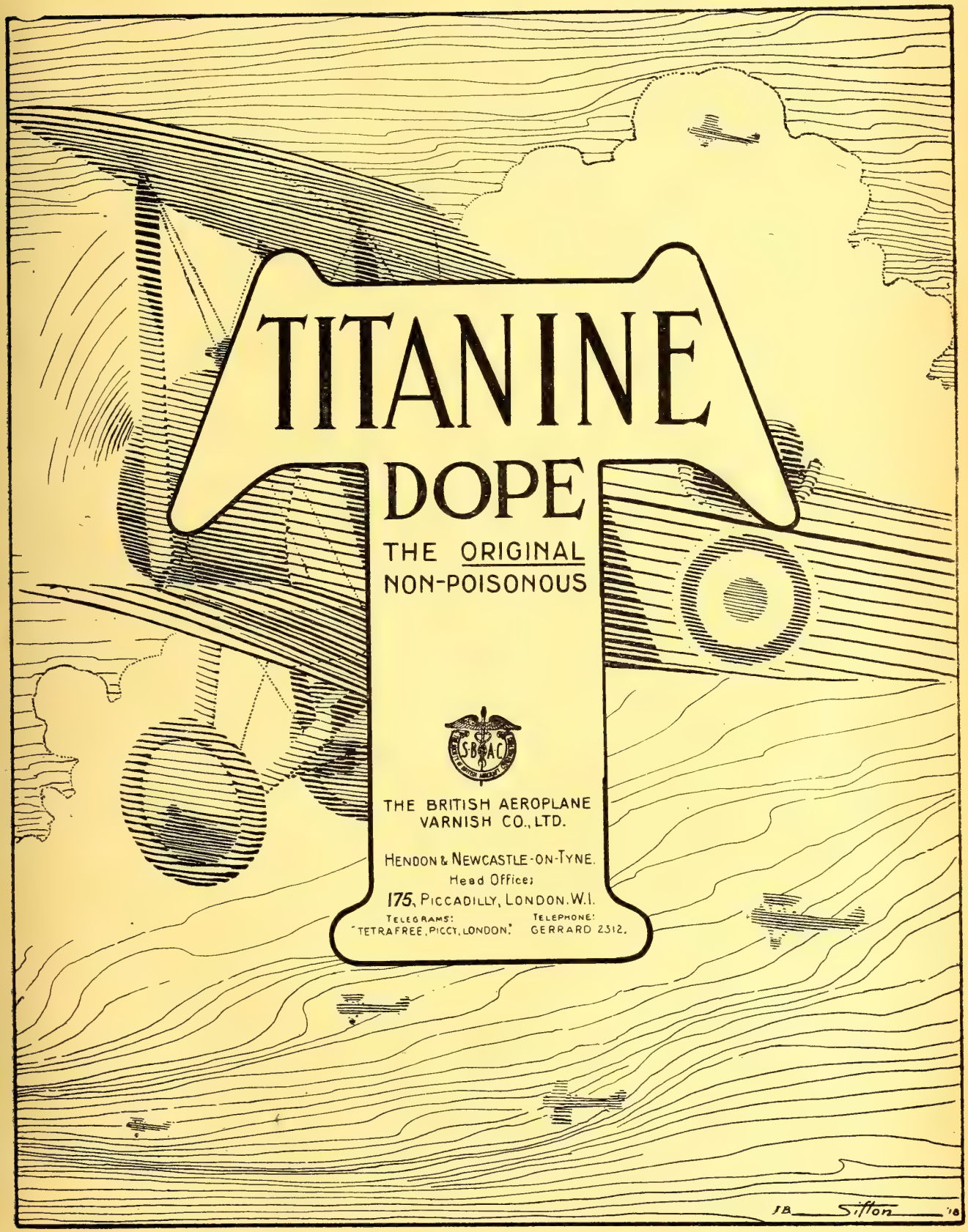
THE ALBATROS D.V.

The Albatros D.V. differs in certain respects from the Albatros D.III., already described in The Aeroplane. It has been popular among German pilots, and the chaser squadron known as the "Tango" is exclusively fitted with machines of the type.

The "half-wing" has been reduced in chord by 11 centimetres. The fuselage is oval in section instead of having flattened sides; the rudder is deeper and its rear edge has been rounded. The shape of the tail-skid fin has been changed, and the engine is now a modified 6-cylinder 160-h.p. Mercédès.



The Albatros. Type D.V.


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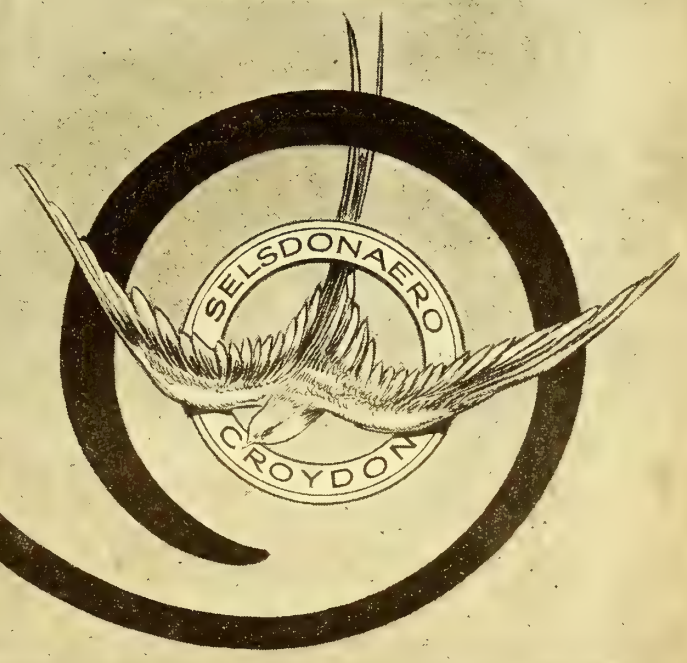
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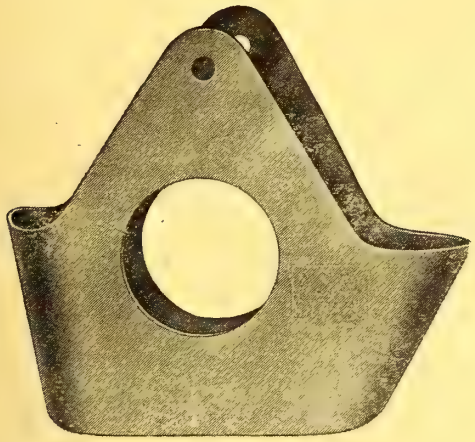



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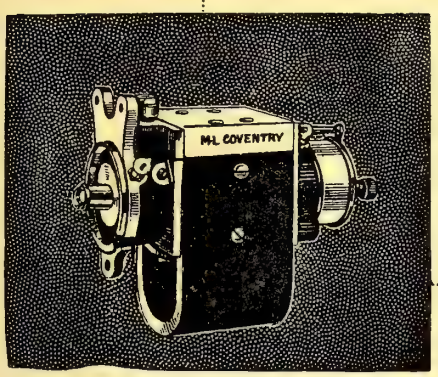
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Gosport Aircraft Co., Gosport. "Flight, Gosport" Telephone No. 217.
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Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
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Shackles—
Willesden 2480.
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd, Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Arnold & Sons, Lawrence Road, Tottenham, N.15.
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London" Vic 4830.
Arnold & Sons, Lawrence Road, Tottenham, N.15.
British Metal (Kingston), Ltd., Kingston-on-Thames. [Staffs
Rubery Owen & Co, Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

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The · Aeroplane ·

Acceptance and Experimental Flights—
The Prodger Isaac Aviation Co "Aeromnia, Piccy, London" Gerrard 278 (2 lines).

Acetylene Welding Plant -
Acetylene Corporation of Great Britain, Ltd, The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic 4830
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone London." 3540 Victoria (3 lines).

Aeroplane Manufacturers—
Aircraft Manufacturing Co, Ltd, Hendon. "Airmanship, Hyde, London" Kingsbury 220.
Armstrong, Sir W, Whitworth & Co, Ltd, Newcastle - on - Tyne "Armstrong Aviation, Newcastle-on-Tyne." Gosforth 500.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds" Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich" Norwich 851.
British & Colonial Aeroplane Co., Ltd. (The Bristol Co.), Filton, Bristol "Aviation, Bristol." Bristol 3006.
British Caudron Co., Ltd., Broadway, Cricklewood, N.W.2. "Caudroplan, Crickle, London." Hampstead 5551.
Central Aircraft Co., High Road, Kilburn, N.W.6. "Aviduction, Phone, London" Hampstead 4403 and 4424.
Davidson Aviation Co, Ltd, Hammersmith, W.6. Hammersmith 1992 (3 lines).
Dawson, John, & Co., Ltd., Newcastle-on-Tyne. "Dependable, Newcastle-on-Tyne." Central 2604 (2 lines).
Eastbourne Aviation Co., Ltd., Eastbourne. "Aircraft, Eastbourne" Eastbourne 1176
Grahame-White Aviation Co., Ltd., London Aerodrome, Hendon. "Volplane, Hyde, London" Kingsbury 120
Handley Page, Ltd., 110, Cricklewood Lane, N.W.2. "Hydrophil, Crickle, London." Hampstead 7220
Hooper & Co, Ltd, 54, St James St, Piccadilly, London, S.W. "Sociable, St James, London" Regent 912
Mann, Egerton & Co., Ltd, Norwich "Motors, Norwich" Norwich 482 (4 lines).
Martinsyde, Ltd., Brooklands, Byfleet, "Martinsyde, Weybridge." Woking 331; Byfleet 171
National Aircraft Manufacturing Co. Ltd., 15, Drummond Crescent, Seymour Street, Euston. Museum 3373.
"Nieuport" & General Aircraft Co., Cricklewood, London, N.W.2 "Nieuscout, Crickle, London"
Willesden 2455
The Regent Carriage Co., Ltd., 126/132, New King's Road, Fulham, S.W.6 "Carbodis, London." Putney 2240-2241
Roe, A. V., & Co., Ltd, Manchester "Triplane, Manchester" City 8530-8531, Manchester.
Saunders, S. E., Ltd., East Cowes, I.O.W. "Consuta, East Cowes" Cowes 103.
Short Bros, Rochester, Eastchurch and Whitehall House, S.W. "Tested, Phone, London." Regent 378
Sopwith Aviation Co, Ltd, Kingston-on-Thames "Sopwith, Kingston" Kingston 1088 (8 lines).
Standard Aircraft Manufacturing Co, 28, Bow Common Lane, E. East 2823
Tarrant, W. G., Byfleet, Surrey "Tarrant, Byfleet" Byfleet 1, 2 & 3
Thames Aviation Works, 111, Curtain Rd, E.C.2 London Wall 9766.
Vickers, Ltd, Imperial Court, Basil Street, Knightsbridge S.W.3 "Vickerfyta, Knights, London" Kensington 6810.
Waring & Gillow, Ltd., Hammersmith. "Warisen, Ox, London" Museum 6000
Westland Aircraft, Yeovil "Aircraft, Yeovil" Yeovil 129
White, J. Samuel, & Co., Ltd., East Cowes "White, East Cowes" Cowes 3
Whitehead Aircraft (1917), Ltd., Richmond, Surrey "Whitecraft, Richmond, Surrey" Richmond 1780-1
Witton & Witton, 143, Fonthill Road, Finsbury Park, London, N. North 2110
Wycombe Aircraft Constructors, Ltd, High Wycombe, Bucks. "Aircraft, High Wycombe" High Wycombe 84

Airships—
Airships, Ltd., High Street, Merton Wimbledon 1314
Short Bros, Rochester, Eastchurch, and Whitehall House, S.W. "Tested, 'Phone, London" Regent 378

Aluminium Castings (Sand and Die)
Coan, R. W., 219, Goswell Road, London, E.C.1 "Krankases, Isling, London" Clerkenwell 3040

Bent Timber Parts—
Hopton & Sons, George Street, Euston Square, London, N.W.1 "Hoptons, Eusquare, London" Museum 406
Also at Market Harborough, Leicestershire "Hoptons, Market Harborough" Market Harborough 33
The Atlas Bedstead Company, Bilston "Atlas, Bilston" Phone No 8 and 81.

Bearings (Etonia Cast Phosphor Bronze)
Yorkshire Engineering Supplies, Ltd., Wortley, Leeds. "Yes, Leeds." Central 1927.

Blowpipes (Oxy-Acetylene)—
Acetylene Corporation of Great Britain, Ltd, The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London" Vic 4830.
Imperial Light, Ltd, 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London" Vic 3540 (3 lines).

Books (Aero Engines).
Dykes' Auto Encyclopedia, Gillam Dome Buildings, Richmond, Surrey

Brass Sheets for Tipping Propellers—
Pritt & Co., 46, Fenchurch Street, London, E.C.3. "Poetry, Fen, London." Avenue 995, 996, and 7000

Buildings—
Boulton & Paul, Ltd., Rose Lane, Norwich "Aviation, Norwich" Norwich 851.
The Camden Construction Co., Ltd, 289, High Street, Camden Town, N.W.1
Palmer, T. W., & Co, Church Road, Merton Abbey, Surrey Wimbledon 1313
Rubery, Owen, & Co, Darlaston, South Staffs
The Wilfley Co., Ltd, Salisbury House, London Wall, E.C.2. "Wrathless, 'Phone, London" City 2681-2.

Cable Coverings and Cable Controls—
The Bowden Brake Co., Ltd, Tyseley, Birmingham. "Bowden, Acock's Green" Acock's Green 103 & 104.
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Carburettors—
Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2 Victoria 4670.

Casein—
Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C. 3. "Suricodon, Fen, London." Avenue 34 and 35

Celluloid (Non-Flam.)—
Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London" Central 1306-7.

Clothing—
Burberry's, Ltd., Haymarket, S.W.1 Regent 2165
Dunhill's, Ltd, Euston Road, N.W.1 "Dunsend, London" North 3405-6

Coloured Rags—
Joseph, A., Earl Street, London Road Southwark, S.E.1. "New Mongo Sedist, London." Hop 83, 361, 4272

Component Parts—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (4 lines)
Central Aircraft Co., High Road, Kilburn, N.W.6 "Aviduction, Phone, London" Hampstead 4403 & 4404
P.D.V. Aircraft Co., Ltd., Princes Street, Richmond. "Acros, Richmond" Richmond 1681
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros., Bilston" Bilston 10.

Cords, Tapes, and Threads—
MacLennan, J., & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Dopes—
British Aeroplane Varnish Co., Ltd., 166, Piccadilly, W.1. "Tetrafrec, Piccy, London" Gerrard 2312.
British Cellulose Co, 8, Waterloo Place, S.W.1 "Cellutate, London" Regent 4036
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1 "Ridleyprem, Piccy, London" Gerrard 250
Cellon, Ltd., 22, Cork Street, London, W.1. "Ajaxb, Reg, London" Gerrard 440

Engines and Parts—
Aston, W. H., & Co., Ltd., Bedford "Pump, Bedford" Bedford No 1
Arrol-Johnston, Ltd., Dumfries "Mocar, Dumfries" Dumfries 281-282
The Beatty School of Flying, Ltd., The Broadway, Cricklewood, N.W.2 Hampstead 3000
Engines and Parts—
Beardmore Aero Eng., Ltd., 112, Great Portland Street, W.1 "Beardmore, London" Gerrard 228
Dudbridge Iron Works, Ltd (Robinson), 87, Victoria Street, London, S.W.1 "Aero, Hight, Vic, London" Vic 7026
Gordon Watney & Co, Ltd., Weybridge "Mercedes, Weybridge" Weybridge 556 (7 lines).
Green Engine Co., Ltd., Twickenham Richmond 1203.
Gwynnes, Ltd., Hammersmith, W "Gwynne, Hammersmith" Hammersmith 1910
Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W "Nitrifier, London" Gerrard 8036
Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1 "Rolhead, London" Gerrard 1054-59
Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton" Wolverhampton 685
The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1 "Eleven-fold, London." Walthamstow 811 (2 lines).

Electrical Accessories -
Belling & Co., Montagu Road, Upper Edmonton, N.18. "Belling, Edmonton" Tottenham 1084
Johnson & Phillips, Ltd., Charlton, London, S.E.7 "Juno, London" Central 2207; London Wall 1564
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1 "Installing, Eusroad, London" Museum 70
Premier Electric Heaters, Ltd., 258, 259, and 260, Tradeo Street, Birmingham "Tabernehent, Birmingham" Midland 211
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10 "Rodynalite, Phone, London" Willesden 2280

Electric Cables -
E. Kalker and Co, Coventry "Kalker, Coventry" Coventry 218
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2207; London Wall 1564

Electric Lighting and Power—
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564
Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Eusroad." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—
W. Canning & Co., 133-137, Great Hampton Street, Birmingham "Materials, Birmingham." Birmingham 3022 Central (3 lines).

Flare Lights—
Imperial Light, Ltd, 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London" Victoria 3540 (3 lines).

Flexible Shafts—
Herbert Terry & Sons, Ltd, Redditch "Springs, Redditch" Redditch 61

Fluxes—
Imperial Light, Ltd, 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools—
Bournemouth Aviation Co, Ltd., Talbot Village, Bournemouth "Etches, Winton" Bournemouth 1160
Cambridge School of Flying and Aerodrome Co., 108, St Andrews Street, Cambridge. "Carbon, Cambridge" Cambridge 5 and 1086.

Furniture (Office)—
Cooke's (Finsbury), Ltd, Finsbury Pavement House, London, E.C.2 London Wall 573 and 6179.

Galvanising—
Boulton & Paul, Ltd., Rose Lane, Norwich "Aviation, Norwich." Norwich 851.

Gauges—
J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17

Gears—
Moss Gear Co, Ltd, Thomas Street, Aston, Birmingham. "Mossgear, Birmingham" East 407



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Glue—
Cannon, B, & Co, Ltd, Lincoln. London Office, 110, Cannon Street, E.C.4 "Beecolin, Cannon, London." City 1206.
Improved Liquid Glues Co., Ltd, 61 Hermitage Street, E (Croid.) "Excroiden, Wapp, London" Avenue 3178
Meadine Co., 8, Arthur Street, E.C Bank 8873
Oldroyd, Wm, & Sons, Ltd, 9, Mincing Lane, E.C 3

Goggles—
Triplex Safety Glass Co., Ltd, 1, Albemarle Street, Piccadilly, W.1 "Shatterls, Piccy, London" Regent 1340

Hack Saw Blades and Machines—
Victor Saw Works, Ltd, 2 and 3, West Street, Finsbury Circus, London, E.C "Viesaw, Phone, London" London Wall 1880

Heating and Ventilating—
Chas P. Kinnell & Co., Ltd, 65 & 65a, Southwark Street, London, S.E.1 "Kinnell, London" Hop 372 (2 lines)
Sturtevan Engineering Co, Ltd, 147, Queen Victoria Street, London, E.C.4 "Turbinevel, London" Central 7121 (6 lines)
The Thames Bank (Blackfriars) Iron Co, Ltd, Upper Ground Street, London, S.E.1 "Hot Water, Friars, London" Hop 763.

Hollow Spars—
McGruer Rentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E "Gabrielson, Watloo, London" Hop 718

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2 Holborn 1308

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co, Ltd, Cambridge "Instrument, Cambridge" Cambridge 612
Short & Mason, Ltd, Macdonald Road, Walthamstow, E.17 "Vincrotd, Phone, London" Walthamstow 1 0
Leather Cloth—
New Pegamoid, Ltd, 134, Queen Victoria Street, London "Pegamoid, Cent, London" City 6701 (2 lines)

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd, Redditch. "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co, Ltd, 204, Tottenham Court Road, W.1 "Vicksmag, Phone, London" Museum 430
The British Thomson-Houston Co, Ltd, Lower Ford Street, Coventry. "Asteroidal, Coventry" Coventry 278
The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry" Coventry 1008-1009

Metal Manufacturers—
Clifford, Chas, & Sons, Ltd, Birmingham "Clifford, Birmingham" Central 42-43 Avenue 1432.

Metals in General—
Guthrie, J. B, & Son, 30, St Mary Axe, E.C.3.
Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London" City 6142

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Aeroplane General Sundries, Ltd, Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4059.
Aircraft Supplies Co, Ltd., Ascot House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (3 lines).
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton" Wolverhampton 1011.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames
Guthrie, J. B, & Son, 30, St. Mary Axe, E.C.3 Avenue 1432.
Lombard Rim and Tube Co., Lombard Street, Birmingham "Lombardic, Birmingham." Midland 211 (2 lines).

Metal Parts and Fittings—
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing. Eusroad, London" Museum 70.
Mountford, Fredk., Ltd., Lifford, Birmingham "Fremo, Birmingham." King's Norton 261
Rubery Owen & Co, Darlaston, South Staffs
Sankey, Joseph, & Sons, Ltd, Wellington, Shropshire "Sankey, Wellington, Salop." Wellington 66.
The Pulvo Engineering Co., Ltd, 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London" Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10 "Rodynalite, Phone, London." Willesden 2280.
Thompson Bros., Ltd, Bradley, Bilston. "Thompson Bros., Bilston" Bilston 10.
Woolet Engineering Co., Ltd, Old Oak Common Lane, Willesden Junction, N.W.10

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford" Keynsham 21.

Metal Spinnings—
Arnold & Sons, Lawrence Road, Tottenham, N.15

Metric Bolts—
Cashmore Bros, Hildreth Street, Balham, S.W. Battersea 475.
Rubery Owen & Co, Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast" Belfast 4033-4034-4035
Bowden Wire, Ltd, Willesden Junction, "Bowirehm, Harles, London" Willesden 2300 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames
Brown Bros., Ltd, Great Eastern Street, E.C.1 "Imbrowned, Betaroad, London." London Wall 0300.
Herbert Frood Co, Ltd, Chapel-en-le-Frith. "Frodobrake, Birmingham" Central 793.
MacLennan, J., & Co., 30, Newgate Street, E.C.1, and at Glasgow. Tapes, Cords and Threads. City 3115

Motor Cars—
Arrol Johnston, Ltd, Dumfries "Mocar, Dumfries." Dumfries 281-282
Mann, Egerton & Co., Ltd., 177-181, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry "Flywheel, Coventry." Coventry 530 (4 lines).

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing"

Observation Panels—
Triplex Safety Glass Co., Ltd, 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2 "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London" London Wall 3266-3267.

Pattern Making—
Fredk. Ward, 6, 7 and 8, Allsop Street, Upper Baker Street, W. Padd. 4743.

Piston Rings—
British Chuck & Piston Ring Co, Coventry. "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd, Don Road, Sneffield "Ocean, Sheffield" Sheffield 2149.
Allen & Simmonds, Ltd., Reading.

Plating, Nickel Silver and Electro Tinning—
Arnold & Sons, Lawrence Road, Tottenham, N.15

Power Presses and Dies—
Bliss, E. W., & Co., 32a, Pocock Street, Blackfriars Road, London, S.E.1. "Blissden London" Hop. 4340.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd, Redditch "Springs, Redditch." Redditch 61

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames. "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104.
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." 24414 Leeds.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil. Yeovil 129.

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rigging for Aircraft—
Quadock, Geo., & Co., Ltd., Wakefield, England "Cradock, Wakefield." Wakefield 466

Rubber Tubing & Accessories—
Hancock, James Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Masticator, Isling, London" City 3811 and 3812.

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Inventors, Redditch." Redditch 74

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
Gosport Aircraft Co, Gosport "Flight, Gosport" Telephone No. 217
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Short Bros, Rochester "Seaplanes, Roaster." Chatham 637.
Supermarine Aviation Co., Ltd, Southampton. "Supermarine, Southampton." Southampton 1337.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds Leeds 2105.

Searchlights & Landing Lights—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines)
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London" Willesden 2280

Shackles—
British Gold Shell Ring Co., Ltd, Hounslow, Middlesex. "Goishel, Hounslow." Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd, Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Arnold & Sons, Lawrence Road, Tottenham, N.15.
Blackburn Aeroplane and Motor Co., Ltd, Olympia, Leeds "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 660.
British Metal (Kingston), Ltd, Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London" Vic 4830
Arnold & Sons, Lawrence Road, Tottenham, N.15.
British Metal (Kingston), Ltd., Kingston-on-Thames [Staffs
Rubery Owen & Co., Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1 "Selaero, Phone, London" Regent 1181.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines)

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Small Tools—
The Small Tool Supply Co., Ltd., Avenue Chambers, Southampton Row, W.C. "Prosait, West-Cent., London." Museum 2655.

Sparking Plugs—
Lodge Sparking Plug Co, Ltd, Rugby. "Igniter, Rugby." Rugby 235.
Ripault, Leo. & Co., Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

Springs—
Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Stampings—
Arnold & Sons, Lawrence Road, Tottenham, N.15.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3. Avenue 1432.

Steel—
Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 to 3237.
Guthrie, J. B., & Son, 30, St Mary Axe, E.C.3. Avenue 1432.
Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Steel Stamps and Markings—
John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).

Taper Pins—
Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—
MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Timber—
Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526.
Hopton & Sons, George Street, Euston Square, London. N.W.1. "Hoptons, Eusquare, London" Museum 496. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.
J. Owen & Sons, Ltd., 109a, Borough High Street, S.E.1. "Bucheron, London." Hop 3811 (2 lines).

Time Recorders—
Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1 Victoria 1310.

Turnbuckles— Staffs.
Rubery Owen & Co., Darlaston, South Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W "Installing, Euston road." Museum 7c (4 lines).

Tyres and Wheels—
The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent." Gerrard 1214 (5 lines).

Undercarriages—
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.
Harland, W., & Son, Merton, London, S.W.19. "Harland, Wimbledon 45." Wimbledon 45 and 1395.
Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—
Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95. Avenue. 1432.

Washers—
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Watchmakers and Jewellers—
(Silver Models)—
Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines).

Welding and Cutting Plant—
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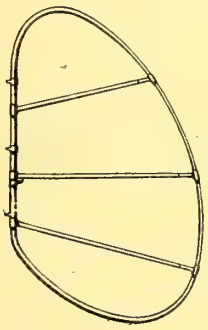
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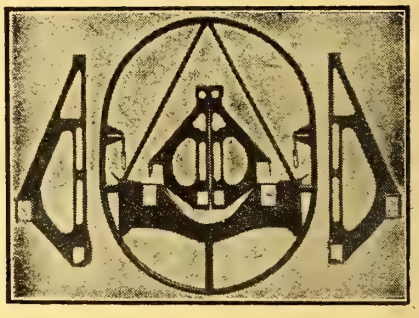
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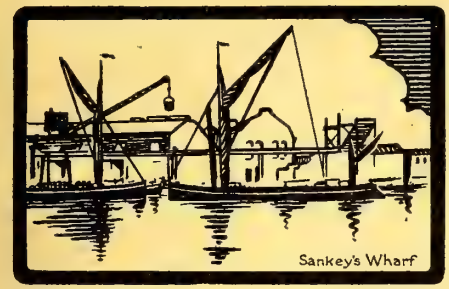
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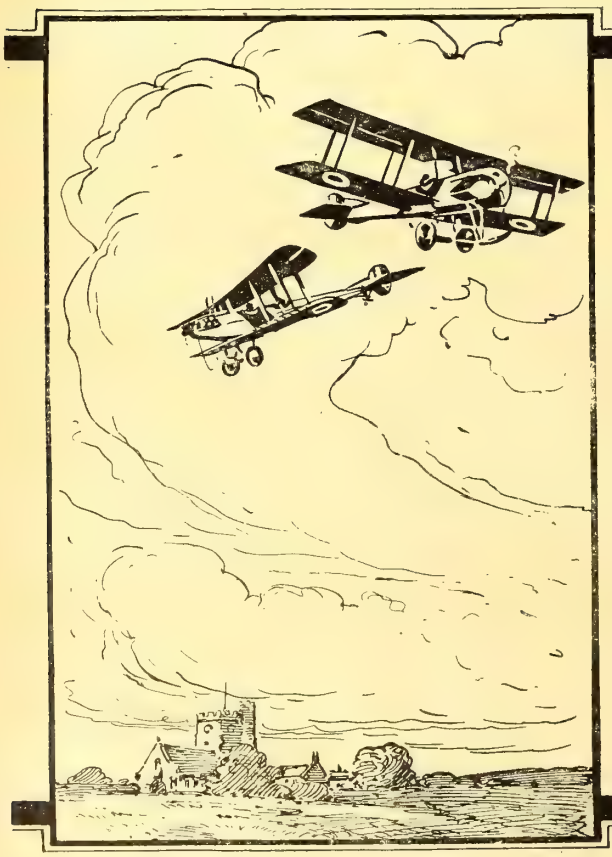
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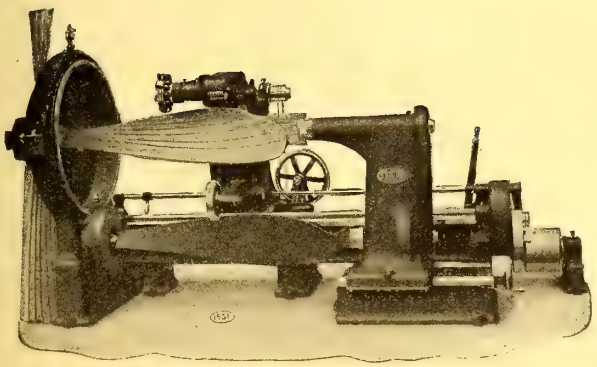
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The general construction remains as in the D.III.

Specification.

Span of upper planes	9	metres.
Span of lower planes	8.7	,,
Length	7.3	,,
Height	2.45	,,

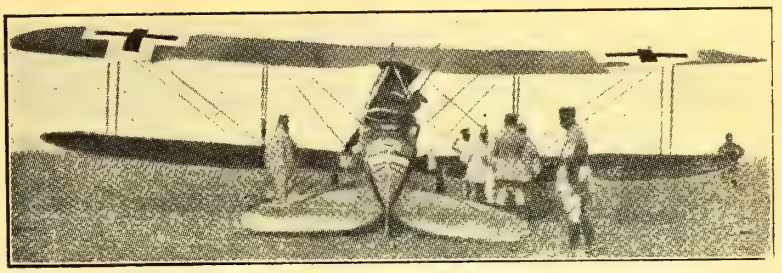
Wings.—Trapezoidal. Almost the same span.

Upper planes cut away in centre with ailerons projecting backwards.

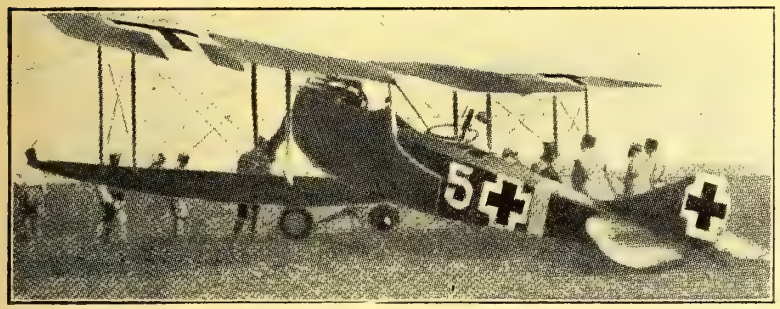
Lower planes less chord and with a slight dihedral.

One pair of interplane struts on each side of fuselage forming a V.

Fuselage.—Monocoque, oval section, tapering horizontally.



The Rumpler C.VII. viewed from behind.



A Threequarter Rear View of the Rumpler C.VII.

Tail.—Elevators balanced in usual Albatros way. Balanced rudder in shape of an inclined oval.

Airscrew.—Under a pot or "casserole."

Engine.—160-h.p. modified Mercédès.

Armament.—Two Spandau machine-guns, firing through the airscrew and operated by the engine.

THE RUMPLERS C.VI. AND C.VII.

The C.VI. and C.VII. type Rumplers are now in common use. The C.IV. type was described some months ago. Nothing has been heard of the C.V. type, which apparently never got beyond the experimental stage.

The dimensions of the C.VI. and C.VII. are the same as those of the C.IV. :—

Span of upper planes	12.6	metres.
Span of lower planes	12.1	,,
Length	8.4	,,
Height	3.25	,,

Engine : Maybach 250-h.p.

No examples of the C.VI. have been captured in good order, but several C.VIIs. have been taken intact.

It is possible to say that the ceiling of the C.VII., which is 6,700 metres (about 22,000 feet) is higher than that of the C.IV. and its climb—5,000 metres (about 16,250 feet) in 27 minutes—is much better. This is attributed to its lighter construction, though one believes that the Maybach engine is largely responsible.

GERMAN NEWS.

The Aeroplane's Danish correspondent writes :—

The very interesting German seaplane (illustrated in the last Aeroplane) is, according to the trade mark, a make of the Hannoverische Waggonfabrik and bears, down to the new form of German iron cross identification mark, evidence of being one of the latest mounts in German naval aviation.

It landed recently in the Danish harbour of Vordingborg with a crew of three men, en route to some Baltic air service station, such as Warnemünde, rumours arising in the papers, from its lack of military equipment, that the case was another of aerial desertion.

Various features are quite clear from the photograph, such as the entrance facilities to the pilot's seat, the raising of the fuselage backwards and the position of the fixed tail plane.

Camouflage is employed on the upper side of the fuselage.

The shape of the balanced rudder is opposed to usual practice. There is only one set of struts between the planes with a cabane of two inclined struts meeting forward by the engine (a Mercédès) and one vertical strut just aft of the pilot's seat.

The control of the non-balanced ailerons, connected by one strut, is led through the planes.

The radiator is of the general type and arranged in the usual way on the top of the planes. Behind it some control arrangement is evident, as well as two sighting panels for the pilot, and there is a cutting for the observer.

The floats show old Nieuport forms forwards and Howard Wright lines aft.

* * *

Some time ago the Imperator Motor Works, Ltd., were formed in Berlin by such well-known German concerns as the A.E.G. Company, the bankers, coalers and shippers, Hugo Stinnes, and the Austrian group Skoda-Austro-Daimler for the manufacture of Diesel engines of sea-going motor ships.

As more attention has, however, been paid to the manufacture of aero-engines, the A.E.G. concern has sold its stock of shares in the Imperator Motor Works to the two other partners, considering the business to interfere with the enterprise which it runs already in the aircraft line.

To strengthen the capacities of the Imperator Company, Hugo Stinnes has together with the German-Luxembourgian Iron Works Co. acquired part interests and close association with the Bavarian Motor Works (formerly the Rapp Aero Engine Co.) in Munich, and with the Brandenburgische and Hansa Aircraft firm, formed in 1914.

* * *

Concerning the two airship manufacturing firms of Germany the following news is to be told. The Schütte-Lanz Aircraft Builders announce the opening of aeroplane manufacturing works at Zeesen by Königswursterhausen. They also advertise their Luward cold glue of water-resisting qualities.

The Zeppelin Works, Lindau, Ltd., in the Bavarian city of the same name announce their experience of many years for production in light metal of the following goods : Metal aeroplanes and seaplanes and metal giant machines, metal floats and metal profiles, in which line the Fokker-Junkers Company will, too, be remembered to be active.

[This last piece of information is particularly interesting, for it suggests that quite possibly the Zeppelin Giant Aeroplane, so carefully described by M. Lagorgette in The Aeroplane, may be the product of the Lindau works of the Zeppelin Co., and may be built there under licence from the Albatros Co., and not, as M. Lagorgette claims, built by the Albatros Works, under licence from the Zeppelin Co. The point cannot be settled for some time, but it is worth noting for future referenee.—Ed.]

LORD SYDENHAM AND KEY INDUSTRIES.

Lord Sydenham, in opening the British Scientific Products Exhibition at King's College, Strand, on Aug. 14th, said that when the war broke out this country was in more danger than it realised, and, perhaps, that was as well. Our Army had proved its worth and our Navy had been our salvation.

Looking back at our disadvantages at the start, the nation had a right to be proud of what had been accomplished. A deadly blow had just been struck at the enemy which made victory almost certain. The Air Force had developed into a mighty engine of offence, and he believed that it would before long take the war into the very heart of Germany. Yet, on the outbreak of hostilities, we were worse prepared with industries necessary to supply fighting forces on sea and land than ever before. Germany had, with deep design, penetrated into our whole commercial system, and obtained the control of most of our key industries.

The country awoke to that fact, and now we could fairly say that there was not a single branch of the industry of war in which we could not beat Germany. We must take care that our key industries were never again surrendered into the hands of foreign nations.

England had never been lacking in inventive power, but Germany had turned our science to the fullest possible account while we had failed to apply it to our national advantage. He hoped the result of our experience would show us that we really stood in the van of scientific progress, and that our advantage would be maintained and secured.



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COMMERCIAL AERONAUTICS

R.A.F. PILOTS AS COMMERCIAL AVIATION PIONEERS.

BY "MEDWAY."

I wonder just who are the "reliable authorities" and "qualified correspondents" whose opinion on Commercial Aerial Transport find their way periodically into the columns of the daily press. Also, just what is the organisation that disseminates their views.

Of one thing I am certain; and that is that the views expressed, while they may be those of the individual, are primarily those held in some official quarter which feels called upon to instruct public opinion.

If I am right, I suggest that it is a pity that what has to be said is not given a definite official seal.

The Official View.

Supposing that the Government expects to be pressed to inaugurate an "aerial chain" while the war is still in progress, and feels that any such course is undesirable, why should not the arguments be put forward in a clear official statement? The case could, for example, be dealt with by means of question and answer in the House of Commons. If opinion in the Air Force supports the official view, there could be no objection to a plain announcement to that effect.

That Well-informed Authority.

On the other hand, there is something rather sinister—or, at least, suspicious—about the appearance in print of what the "well-informed authority," who prefers to remain anonymous, has to say on the subject. Especially is this so when the authority states categorically that his view is that held by the Air Force.

What the thing amounts to is that the public is recommended to mind its own business, and not to press for developments which the flying men themselves do not approve. I should like to feel sure that this is the real position; that what we read is truly the view of members of the Air Force, and not merely the apologia of an official who does not wish to be hurried.

Keep Off the Grass.

To illustrate my point, let me quote from a recently published paragraph, which, to my mind, reads like a camouflaged version of an official warning to "Keep Off the Grass."

"The future importance of aeronautics in commerce is fully recognised by the British authorities, but there are military objections to any measures which would transfer men and material from the Royal Air Force to civilian activities while the war has still to be won.

"The suggestion has been advanced that machines which are out of date for fighting purposes could be made available for the development of an air post, or for other forms of aerial transport, and that pilots whose nerves are unfitted for flying at the front could be released to fly machines used commercially at home. The answer of the Air Force to this contention is that there are certainly numbers of obsolete machines, but these are found very useful for the work of training the personnel of the Force as the men come along, and even if the machines cannot be used for training purposes the various parts can often be utilised in the construction of newer types.

"The position is much the same in the case of pilots whose nerves have been strained to such an extent that they are no longer able to carry on their flying duties. There is work for these officers in training new men, or in undertaking ground duties which require flying knowledge.

"The refusal to sanction any depletion of the man-power or material of the Royal Air Force in order that experiments with air posts may be begun does not imply any lack of enthusiasm for the commercial development of the aeroplane. Flying men, it is authoritatively stated, are determined that, just as the British mercantile marine has carried the seaborne traffic of the world, the British Air Service after the war must lead in carrying the airborne traffic of the world.

'Practically every port of call around the world is British, and it is confidently expected that British aerodromes within the Empire will provide the links of a complete aerial chain.

"It is urged, however, that the view in correct perspective at the present time is that any energy diverted to civilian enterprises is energy lost to the prosecution of the war. When the war is over there will be opportunities in plenty to turn the Air Force to commercial account."

Begging the Question.

All this savours strongly of begging the question. It is assumed to be established that any war-time development in the direction of Commercial Aviation must necessarily involve a "depletion of man-power or material," and that this is "the answer of the Air Force" to any proposal of any kind.

Meanwhile, soothing syrup is administered in the form of mere bombast about our grandiose intentions for the future. We will carry the airborne traffic of the world! We will establish an aerial chain embracing the whole globe! We will, in fact, do a great deal, if, as so often happens, we do not arrive just too late, or, at any rate, late enough to increase our difficulties ten-fold.

Now, does it in the least follow that, in preparing for Commercial Aviation, we must NECESSARILY weaken our fighting power in the air? I think not.

Does it follow that the man whose nerve no longer fits him for flying at the front is NECESSARILY best employed at training centres in this country? Again, I think not.

Is the establishment of regular aerial posts the ONLY alternative? No, there are others.

A Scheme in Outline.

Let us see if we cannot rough out an outline of a scheme which would utilise some of our tired and nerve-strained pilots, and some of our machines, which, from the fighting standpoint, are obsolete, to the advantage both of the Air Force and of Commercial Aviation.

My idea is that these men and machines should go out to all parts of the British Empire. Their mission would be to bring home some of the facts of war and some of the potentialities of peace-time aviation to dwellers in remote districts who hardly realise even yet the full significance of what is happening within aerial range of the fighting fronts.

Would not their coming stimulate recruiting wherever the voluntary system still exists? Would it not, everywhere, help to bring suitable recruits to the Air Force? And would it not, at the same time, stir the imagination even of the most stolid rural communities, and prepare them to utilise the great new system of transport that we mean to offer them?

Recruiting and Education.

This Empire recruiting campaign for the Royal Air Force would increase, and not diminish, our fighting power. No recruiting agent could be more potent than the man who goes by air to the far ends of the world, and says in effect: "I have done my bit, and, having done it, I have come to ask you to take over my job, for which I am no longer fitted."

It will not decrease our military strength if he also adds: "I have brought you newspapers, published only six hours ago, in a great city, five to eight hundred miles distant. I have brought you in a few days papers from home that would not have reached you for weeks or months. Think it over, and tell us whether you would not like an aerial service permanently established."

Useful Work.

Neither would it reduce our war efficiency if these same men made a preliminary survey of the land, indicating the best positions for landing grounds, and suggesting how the services would link up, and what they would do for the locality.

The net result would be an access of new strength to the R.A.F., and a series of reports which, when collated, would show us just where and how to begin upon the formation of our "aerial chain" as soon as the war is over.

The very phrase, "aerial chain," shows how much we still fail to realise. We talk of linking up "ports of call."

Well and good, but what we want is a network, not a chain, linking up inland districts also, and making every township, wherever situated, into a "port of call."

The sea-board has always been the easiest thing to develop, because it can be reached by water, and without the construction of road or rail. We have to realise that now, for the first time, we have the ready means for carrying the development inland.

The Real Point.

My comments may be rambling. That, I think, is unavoidable when one attempts to deal in few words with a subject that is gigantic. However, I should feel that I have made my point

if the reader has been brought to agree that it is altogether wrong to start with the assumption that to think of commercial development is necessarily tantamount to encouraging decreased military efficiency. We have no right to assume anything of the kind.

Further Suggestions Wanted.

What we have to do is to try and devise some plan by which our two objects can be combined. Perhaps my plan is a poor one. If so, it does not mean that the problem is insoluble, but only that I have as yet failed to solve it.

In that case, others will be more successful, provided that we do not make the mistake of accepting the view which some official inspires, but dare not express as his own; the view that it is in some way unpatriotic even to THINK of the future; that its needs cannot CONCEIVABLY be reconciled with those of the present; that we must take no thought of the morrow; and that, however neglectful we may be, it will be "all right on the day."

THE PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by The Aeroplane from the current Official Patents Records :—

Patents Applications.

Bushell, H. Angle or level indicator for aircraft. No. 12608. July 30th.
Goodyear Tyre and Rubber Co. Kite balloons. No. 12385. Aug. 30th.
Greenby, A. J. Power controls for aeronautical machines, etc No. 12485. July 31st.
Hayward, C. J. Anti-aircraft sight for machine-guns. No. 12310. July 29th.
Hekimian, A. Construction of hangars for housing aircraft, etc. No. 12571. Aug. 1st.
Higginbottom, J. Air-screws of aeroplanes and marine screw propellers. No. 12297. July 29th.
Higgs, P. W. Safety bomb. No. 12634. Aug. 2nd.
Holle, A. A. Aerofoils for aeroplanes. No. 12636. Aug. 2nd.
Hughes, A. J. Apparatus for steering aircraft. No. 12577. Aug. 1st.
Hughes and Son, H. Instrument for determining drift of aircraft, etc., due to side wind. No. 12578. Aug. 1st.
Krammer, H. E. Sectional flying-boat. No. 12431. July 30th
Krammer, H. E. Flying-boat fuselages. No. 12342. July 30th.
Langley, E. M. Photographic apparatus for use upon aircraft. No. 12326. July 29th.
Mallinson, B. H. Aeroplane wing incident control. No. 12473. July 31st.
Mayrew, J. J. Spar, beam, etc. No. 12380. July 30th.
Murphy, L. Construction for electric dynamos and motors for aircraft, etc. No. 12672. Aug. 2nd
Navarro, J. G. Steering and braking mechanism for aircraft. No. 12606. Aug. 2nd.
Paynter, W. C. Lateral level for aeroplane or seaplane. No. 12546. Aug. 1st.
Scatchard, F. Indicating curvilinear motion of aeroplanes, etc. No. 12621. Aug. 2nd.
Soc. Anon. Nieuport. Aeroplanes. No. 12459. July 31st.
Tellier et Cie, A. Hydro-aeroplanes. No. 12604. Aug. 1st.
Andrews, H. Girders, spars, etc. No. 12754. Aug. 6th.
Bowden, W. Hydraulic aeroplane controls. No. 12741. Aug. 6th.
Cawdery, J. W. Parachutes. No. 13012. Aug. 10th.
Gilbert, W. V. Means for operating aircraft controls. No. 12953. Aug. 9th.
Gosling and Moore. Means for synchronising machine guns with aircraft propellers. No. 12798. Aug. 7th.
James Cycle Co. Mounting, aiming, and firing guns for engaging aircraft. No. 12730. Aug. 6th.
James Cycle Co. Laying anti-aircraft, etc., guns for angle of sight and range. No. 12731. Aug. 6th.
James Cycle Co. Apparatus for determining distance of objects from fixed point. No. 12732. Aug. 6th.
Lanchester, F. W. Alighting mechanism of aeroplanes. No. 13005. Aug. 10th.
Leaman, T. P. Aeroplanes. No. 12947. Aug. 9th.
Marshall, D. Propelling means for aircraft and water vessels. No. 12939. Aug. 9th.
Robertson, H. Fluid levels indicating position of aircraft or seacraft in relation to vertical. No. 12806. Aug. 7th.
Shaw, W. R. D. Aeroplanes. No. 12998. Aug. 10th.
Sherwill, W. S. Level for aeroplanes. No. 12753. Aug. 6th.
Tavani, F. Detecting presence and position of aircraft. No. 12937. Aug. 9th.
Thomson, A. J. Combined seaplane and aeroplane. No. 12945. Aug. 9th.

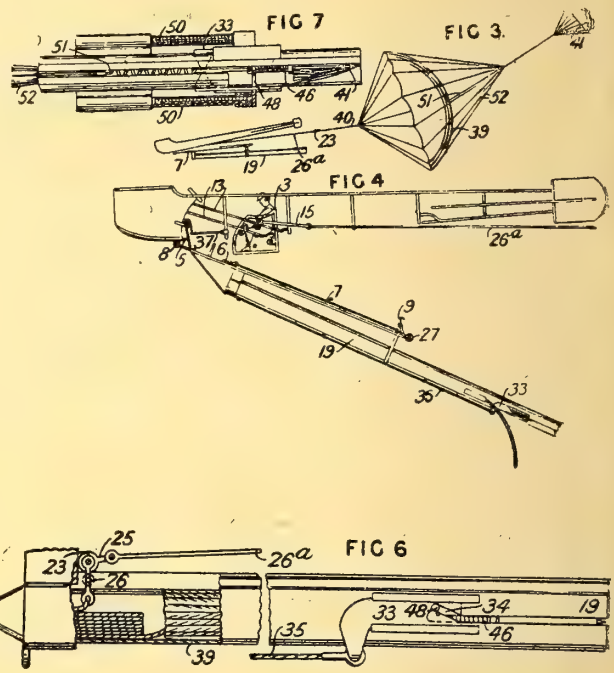
Complete Specifications Accepted, prints of which can be obtained on and after Aug. 22nd, 1918.

117,641. Nov. 16th, 1917. Julyan, H. E., and Welbach, E.C. Illuminating mariners, aeroplane and military compass cards.
117,663. July 23rd, 1917. Dickson, H. C. Tubes, struts, stays and like elements, also applicable to the wings or planes, tail, body and other parts of aerial craft.
117,667. July 24th, 1917. Calthrop, E. R. Cellular concrete structures.
117,747. Rye, A. L. Height-finders, range-finders, and like instruments.

Abridgments of recently Published Specifications.

116,498. Parachutes. Uttz, W. A., Randal Hotel, Ardmore, Oklahoma, U.S.A., June 1st, 1918, No. 9079. Convention date, June 1st, 1917. Not yet accepted. Abridged as open to inspection under Sec. 91 of the Act.

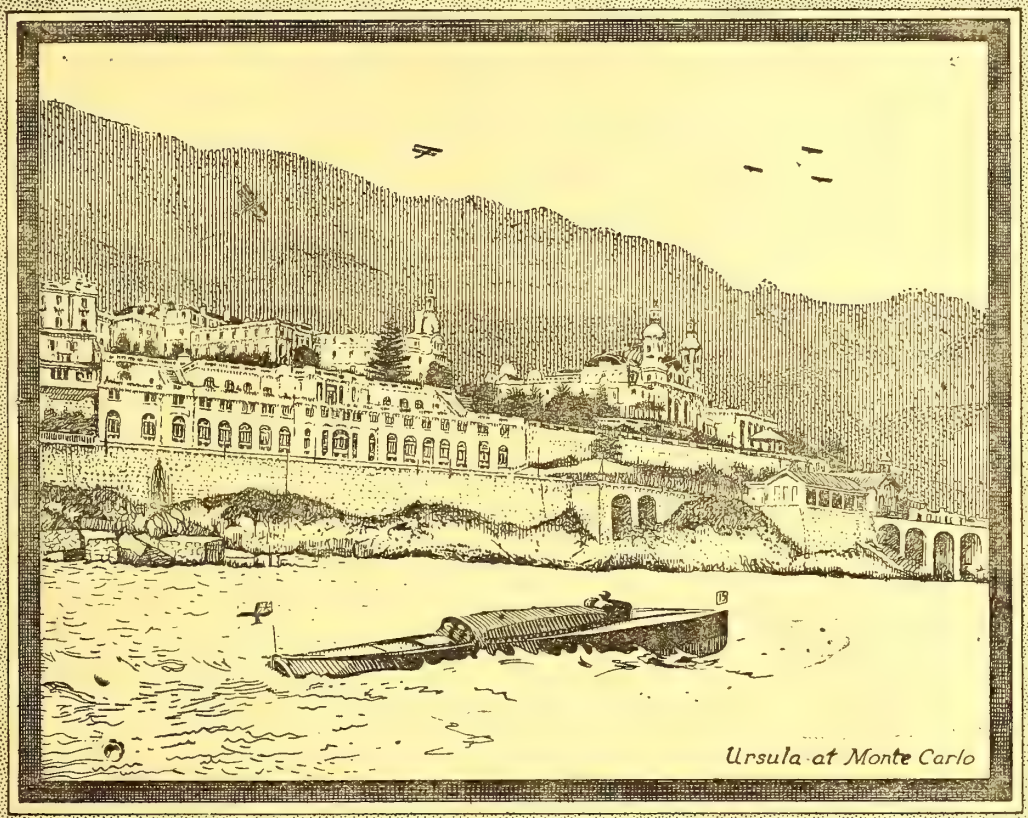
A parachute carried in a container under the fuselage of an aeroplane is connected to a detachable seat for the pilot in such a way that, when the parachute is released and allowed to open, the seat is drawn rearwards and downwards free of the machine.



The container 19, Fig. 4, is carried by a movable section 7 hinged at 8 underneath the fuselage, and normally held secured to the fuselage by a catch 9. The seat 3 is mounted on inclined rails 13 and normally rests on a projection 5 of the fuselage and a cross-bar 6 on the section 7. The parachute comprises smaller and larger members 41, 39, Fig. 3, connected together by cords 51, 52, the cord 40 of the larger member being connected by a link 26, Fig. 6, to a carriage 23, which runs on a track on the container 19, and is further connected by a link 25 to a cord 26*a*. which normally passes round a pulley 27, Fig. 4, on the section 7, and is attached by a bail 15 to the seat. The smaller parachute 41 is of umbrella type opened by a spring 46, Figs. 6 and 7, and is normally held in the container, against the pressure of springs 50, by a cross-bar 48 engaging bayonet-slots in the opposite sides of the container. The bar 48 is released from these bayonet-slots by movement of a yoke 33 formed at opposite sides of the container with reversely inclined slots 34, the yoke being actuated by means of a cord 35 connected to a hand-lever 37, Fig. 4, near the pilot. When the parachute 41 is thus released, it is forced out of the casing by the springs 50, and opened by the spring 46, drawing out the larger parachute as shown in Fig. 3. The carriage 23 is thus drawn rearwards, so that the cord 26*a* becomes taut and pulls the seat rearwards and downwards, at the same time releasing the catch 9 and allowing the section 7 to fall, as shown in Fig. 4.

116,534. Parachutes. Calthrop, E. R., Eldon Street House, Eldon Street, London.

In parachutes which, in the closed position, are contained within a two-part casing or envelope, for example, as described in Specifications 21312/14 and 111,312, means are provided whereby, upon the application of the load to the parachute, the vacuum formed within the container is destroyed so as to facilitate the separation of the two parts of the envelope. In the form shown in Fig. 1, the upper part 2 of the container and of the flexible envelope described in the above-mentioned specifications is provided with a plug 4, which is opened by means of wires 5, when the load comes on the centre piece 7, thus destroying the vacuum formed within the flexible envelope during the time that the lower part 10 of the flexible envelope is being pulled down by the load, and until this lower part becomes separated from the upper part.



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FIG.1. FIG.2.

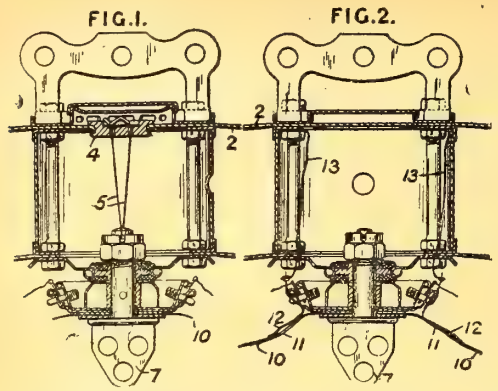
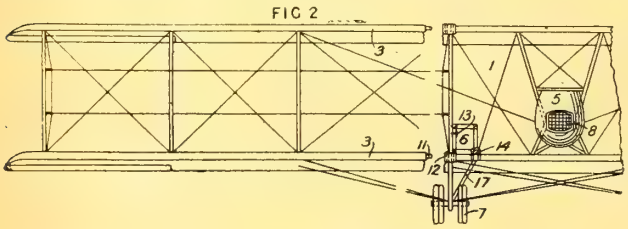


Fig. 2 shows a modification in which stripping-pieces 12, covering holes 11 in the lower flexible cover 10, are removed as cords 13 are drawn tight by the load.

116,269. Aeronautics. Caproni, G., 28, Via S. Gregorio, Milan, Italy. Not yet accepted. Abridged as open to inspection under Sect. 91 of the Act. (Class 4.)

FIG 2

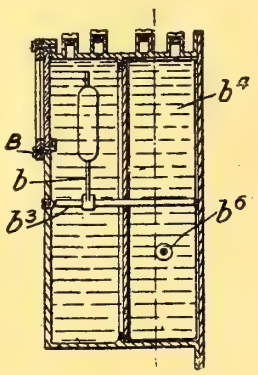


Planes, Arrangement of; Cars; Framework; Land Wheels.—Aeroplanes, particularly biplanes having two fuselages, are constructed so that the fuselages, wings, and landing-carriage may be dismounted from the central cell of the planes. In the form shown, two fuselages 6 carrying the engines are secured to the cell 1 by bolts 13 and stirrups 14, and the wings 3 are attached by means of extensions 11 entering sockets 12 and secured therein by bolts. Lateral stability of the landing-carriages 7, when the wings are detached, is ensured by struts 17 which are attached to the cell 1 by the stirrups 14. The car 5 is mounted on the lower plane.

Propelling; Heating.—The engine radiators are mounted in front of and below their respective engines in the two fuselages 6, and another radiator 8 is placed at the front of the car 5 and may serve to heat the car, being for this purpose fitted with adjustable dampers or apertures for regulating the temperature.

116,108. Clinometers. Sage & Co., F., 58, Gray's Inn Road, London, and Feary, N. A. T. N., 17, Paston Lane, Walton, Peterborough, Northamptonshire.

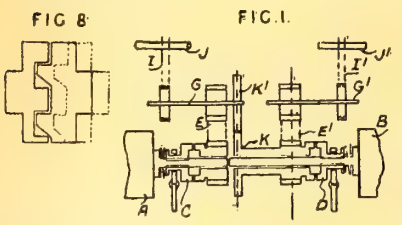
FIG.3.



A clinometer for aircraft, etc., comprises a casing filled with liquid and divided into two compartments, in one of which is a buoyant member B carried by an arm b on a spindle b^3, said member serving as an indicating-needle, the needle and co-operating scales being preferably coated with luminous paint. The spindle b^3 passes into the second compartment, where it is provided with a vane b^4, the lower portion of which is provided with a buoyant member b^6 on each side.

116,149. Aeronautics. Baily, A. H. 33, St. Swithin's Lane, London.

FIG 8 FIG.1.



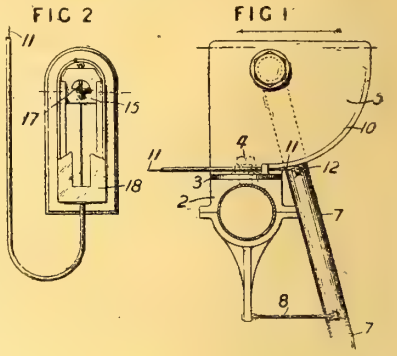
Propelling.—In driving-mechanism for aircraft propellers comprising a pair of engines coupled together, two engines A, B, Fig. 1, drive propeller shafts, J, J^1 through clutches C, D, chain gearing E, E^1, shafts, G, G^1, and chain gearing I, I^1, and are coupled together by gearing K, K^1. One element of each clutch C, D is made of ratchet form, as shown in Fig. 8, to allow one engine to overrun the other. In modifications, the two engines are placed side by side, and their parallel shafts are geared together and each drives a propeller shaft through bevel or chain gearing.

Reference has been directed by the Comptroller to Specifications 19824/09, 6047/13, and 10211/14.

116,363. Aeronautics. Pashley, C. L. and Pashley, A. H. D., 27, Badminton Road, Balham, London.

Alighting-Indicators.—A device for indicating to an aviator his proximity to the ground comprises a pendent pivoted arm adapted to contact with the ground and actuate through Bowden mechanism an indicating-device in accordance with the angular position of the arm. Fig. 1 shows an arm 7 pivoted between two walls 5 carried on a turntable 3 which is pivoted about a vertical pin 4 to a bracket 2 secured to the wheel axle. The arm is normally retained in the position shown by a rubber spring 8. A Bowden wire 11 is connected to a lug 12 on the arm, and is drawn around a segmental track 10 on one of the walls 5 as the arm is moved backwards. The other end of the wire is connected to a sliding member 15, Fig. 2, adapted to be pulled down behind a graduated face 18 against the action of a spring 17. The member 15 may be illuminated.

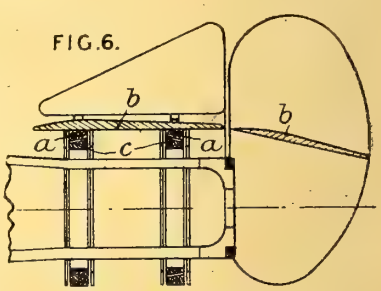
FIG 2 FIG 1



116,364. Aeronautics. Ritchie, H. R., 116, Deacon Road, Kingston-on-Thames.

Steering and Balancing.—In aeroplanes in which the tail-surfaces are rotated about a longitudinal axis for lateral balancing, the tail-plane and elevator b are carried by rings a rotatable on rings c fixed to the body, the rotation being affected by connections to the rudder-bar, which, for this purpose, is mounted to oscillate in a vertical plane, in addition to the usual fore-and-aft oscillation for controlling the rudder. According to the Provisional Specification, the elevator alone may be rotatably mounted.

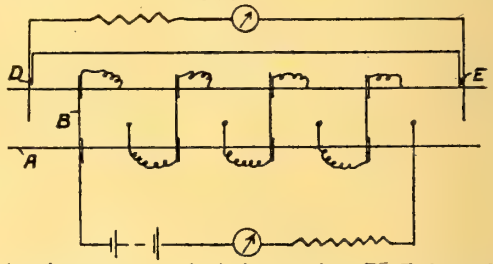
FIG.6.



116,385. Anemometers, logs, etc. Williams, I., Physics Department, Bristol University, Bristol.

In order to measure the velocity of a fluid or the velocity of a body such as an airship, aeroplane, or ship through a fluid, wires B disposed across a tube A and connected up in series are heated

FIG.1.



by an electric current, and platinum wires D, E fused into the tube are connected to one or more thermo-couples. The heating current may be kept constant and the velocity measured by the varying effect on the thermo couples, or a constant difference of temperature may be maintained between D and E by varying the heating current, the velocity then being determined by measuring the variations.

116,546. Joints for Corrugated Sheets. Nissen, P. N., c/o The Institute of Mining and Metallurgy, 1, Finsbury Circus, London.

FIG.2.



Junction pieces for the joints or seams of corrugated sheets used in constructing buildings, fences, tanks, bins, and the like, comprise two strips a of corrugated sheet material riveted or otherwise fixed together with suitable distance pieces c forming grooves d, which may be slid along the edges of two adjacent sheets. The sheets may be corrugated only at the jointing edges.

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THE AIRCRAFT TRADER

MARKET TOPICS.

Prices are for quantities on usual terms.

Aug. 15th, 1918.

COPPER.—Since the last report the U.S.A. authorities have, as arranged, considered the official price which must be paid for Copper for the next three months; and although very careful consideration was doubtless given to the arguments brought forward by producers for an advance, it has been decided to allow the price to remain unaltered, i.e., 26c.

Although previously the authorities have only fixed the price for a period of three months, it is rumoured that the price now fixed will remain in force until Dec. 1st, 1918.

Prior to the price being reaffirmed, it was rumoured that there would be an advance to 27c. Consequently, buyers made large purchases, and it is now expected that a period of comparative quietness will be experienced.

U.S.A. manufacturers of finished products are complaining that the alteration of the price from 23½c. to 26c. before the expiration of the period for which the former price should have remained in force, viz., Aug. 15th, has hit them very badly indeed, contracts having been fixed up, based on the official price. There is, no doubt, just cause for complaint, and it is expected that the authorities will give the matter careful consideration.

Stocks of Copper are increasing very nicely, and there are no fears of the demands of the Allies not being met. This is certainly a very gratifying position.

Prices here remain unchanged.

CURRENT PRICES.

Standard	£122 10 0 per ton	Cash.
Electrolytic	£137 0 0	,,
B/S.	£135 0 0	,,
Sheets	£161 0 0	,,

TIN.—The Tin market is still in a state of uncertainty, and will, undoubtedly, continue in this condition as long as the Eastern speculators are allowed to continue unchecked. Buyers in U.S.A. are apparently prepared to buy at any price, and their action forces the Eastern market up, and puts English buyers in a very difficult position. Either the Allies should centralise their buying, or the American Government should exercise a tighter control on Tin purchases.

During the past 14 days Eastern prices advanced to £406, but have during the past few days declined again to £381 10s., and it is significant that there are few buyers at this figure. Prices here have advanced to £399, and now stand at £388.

Steps are being taken in America to conserve the stocks of Tin, encouraged, probably, by the success which has attended our efforts here. According to a recent report issued by the Foreign Office, the following economies were effected here.

	Tons.	To July, 1918. Tons.
Biscuit Tins, 1913	12,000	515
Boot Polish Tins, 1913	6,000	Nil.
Printing Ink Tins, 1913	237	31

Recent arrivals of Tin have been very small, and shipments are anxiously awaited; the position is by no means comfortable, and the demand for war work shows no signs of decline, but, on the contrary, is likely to increase considerably.

COMPARATIVE PRICES.

Aug. 14th	£388 per ton.
Aug. 8th	£388 ,,
Aug. 2nd	£399 ,,
July 26th	£380 ,,

LEAD.—Supplies are, apparently, satisfactory, there is, however, an acute shortage in U.S.A. Prices continue unaltered.

STEEL.—Supplies of Aircraft Steel Bars are very satisfactory. In fact, the days of an expected shortage are a thing of the past. Large stocks have been accumulated and the position generally is most satisfactory.

The same optimistic remarks cannot be made about Steel Sheets, as there is a very serious shortage. This was mentioned in these columns some time ago, and, although the Air Ministry officials are apparently tackling the matter, only a slight improvement has been effected. To obviate a hold up on production firms should look well ahead.

There are huge stocks of High Speed Steel in various parts of the country. In some quarters the gross total is estimated at several thousand tons. Consequently makers are very slack indeed. If the quantity given is correct, there does not appear to be any reason why the authorities should not give the makers permission to export. Supplies of Cast Steel are very satisfactory.

There has not yet been any alteration in the prices of Aircraft Steels. It is, however, still expected that there will be an advance shortly. Prices generally remain unaltered.

TIMBER.—Very little Silver Spruce appears to have been received lately, although it is rumoured that large quantities are expected. The substitute which has been issued to various factories is not giving satisfaction. In fact, it is understood that the A.I.D. has rejected large quantities at one or two factories. Of course, considering past rejections of parts made from the finest quality of Silver Spruce, this is no gauge.

The difficulty of finding inspectors with practical experience of Timber is appreciated. At the same time, it is simply heart-breaking to see some of the rejections which are being made when there is such an appalling shortage of suitable Timber. As a matter of fact, very few inspectors realise the gravity of the situation, and, presumably, think there are unlimited stocks of Aircraft Timber available.

Plywood supplies are at present quite satisfactory, and no further news has been received of the expected order giving the Ministry power to control all plywood manufactured here.

Very little Mahogany has recently been received and consumers should anticipate their requirements. Official prices remain unaltered.

FABRIC.—The outlook cannot be considered very satisfactory, and the officials responsible for supplies will have their work cut out to keep the constructors supplied until the new Flax crop has been obtained, say about October. It is understood that a very good crop is expected.

It is practically certain that prices will be advanced during the next three months.

A MARTINSYDE SPORTS MEETING.

On Saturday, Aug. 24th, the Martinsyde Recreation Club are holding a sports meeting and carnival under A.A.A. rules at Woking Recreation Ground. The proceedings to commence at 1.30 p.m. The varied nature of the programme promises a very interesting afternoon.

A good deal of attention in the closed events will be devoted to races for ladies and children, special events being organised for Girl Guides and Boy Scouts.

A concert and dance will take place in the evening, and as the the ground is only three minutes from Woking Station, the visitors should have little difficulty in travelling. Payment at the gate made on the day. Part of the proceeds of the function will be devoted to charity.

ASCOL ORGANISATION.

The activities of the Aircraft Supplies Co., Ltd., are spreading far afield, and the firm is now represented in all the big manufacturing centres in the United Kingdom.

Mr. George A. Mansfield, the managing director of the concern, not only recognises the importance of having competent local representatives, but he also appreciates the necessity for co-ordinated work between the salesmen at the outposts and the buyers and organisers at "Ascol House," Long Acre, the headquarters of the Aircraft Supplies Co., Ltd.

To this end conferences are held in London from time to time when the salesmen representatives (and saleswomen, too) have an opportunity of comparing notes with one another, and with the buyers whose duty it is to keep the stores at "Ascol House" in the condition of the "Widow's Cruse."

Such a convention was held on August 15th, and after the business of the day was done, Mr. Mansfield gave an informal dinner party to his representatives at the Holborn Restaurant, followed by an impromptu concert provided by the guests, who seemed delighted at the opportunity of showing their goodwill for their host.

Mr. Mansfield, in acknowledging the drinking of his health, pointed out that he was a believer in payment by results, both in the factory and on the road, and that so long as a representative brought new business to the House he did not grudge him his share of the earnings, no matter how great the amount, a sentiment with which one cordially agrees.

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AIRCRAFT FINANCE

CURRENT TOPICS.

Speculation Should be Restrained.

Sporadic outbursts of speculative activity ought to be checked by official interference in the Stock Exchange, but the authorities do not evidently think there is justification for any action.

If the money and energy involved in such speculation were centred in the war financing it would be to the national benefit. But it seems that a large number of people consider they have sunk quite enough money in War Loan, Treasury Bills and the like; consequently they want to spread their money.

Coal in Kent.

It is in the Southern group of Home Railway stock that a lot of the speculation has been centred. Possibilities of Kent coal developments have been largely responsible for the movement in the stocks. No doubt these possibilities are promising, but seeing that the railways are completely under the thumb of the Government, and that there is a chance of this control being maintained for some time to come, it ought to be borne in mind that a long period must elapse before the benefit of these possibilities will be realised by the stockholders.

Example of Interference.

While on the subject of official interference, it is opportune to chronicle what is happening in the banking world in connection with deposits. When the value of money was artificially lowered by manipulating the rate of interest allowable by the banks for money on deposit to 3 per cent., it was understood that the banks were to use moral pressure on the customers in order to stimulate the purchases of National War Bonds or Treasury Bills.

Counter Measures.

A certain measure of success has attended these efforts. It appears that some people who have an abnormally large amount of money on deposit, that is to say, more money than it is considered necessary for ordinary purposes of their business, are being told point blank to reduce the total to normal dimensions, or remove it altogether. No doubt it sounds fanciful, but it is reality. The banks are acting as much for their own safety as for the benefit of the nation. It is, however, not always a success, because some of the depositors find it expedient to divide their deposits between two or more banks.

Napiers being Quietly Bought.

Chiefly because of the buying from the provinces there has been considerable activity in domestic shares. Charrons keep prominent on the expected benefits arising out of new factories in this country. The recovery in Darracqs has made further progress now that the German bombardment of Paris has ceased, and removed any possibility of the company's works being damaged thereby. Strength has been fully maintained by Sunbeams and Triumphs, and Napiers are being quietly picked up in expectations of a bigger dividend, it being generally conceded that the company is earning a substantially larger profit.

United States Aviation Bill.

In the $12,000,000,000 Army Appropriation Bill, signed by President Wilson last month, no less than $884,000,000 is scheduled for aviation. £175,000,000 for aviation just denotes that the United States is going the "whole hog" on this war. If additional evidence be needed to prove that the country is taking the war seriously it can be provided in abundance. It is even evident in the financial abstract where the axiom appears to be that the sooner the fighting is finished the cheaper it will be: which is sensible.

A Spanish Aeroplane Company.

Quite a lot is being heard just now about aerial mail services, more particularly in neutral countries. A newly formed company intends to inaugurate a mail service between Madrid, Barcelona, and the Balearic Islands; it is to develop eventually into a passenger service. No subsidy is asked for, but merely the provision of authorised landing places and permission to stamp mails carried, according to the Ministry of Public Works.

Its Possibilities.

This project is likely to attain some measure of success, not financial, but utilitarian success. First of all, it is out of the sphere of the war, and, in the second place, it may provide an immunity from submarine risks. What the capitalisation is to be and how much profit is expected out of the services we are not told. But Spain is reeking with gold, thanks to the neutral benefits derived from the war, and one can scarcely believe that the provision of the necessary capital at a comparatively low cost will be at all difficult.

Aerial Mail Service.

By the way, some appropriate calculations have appeared in the daily press in connection with the commercial basis of an aeroplane passenger and postal service. With a capital of £500,000 a service of 24 machines could be provided. On a non-stop flight of 400 miles and a minimum service of six medium-sized 300 horse-power machines, carrying 4,000 lb. of revenue-earning load in addition to the pilot, mechanic, and petrol necessary for a five-hour flight, the cost per ton mile would work out at 20½d., and the cost per passenger mile 1.36d. It would be commercially possible to carry six passengers at 2¼d. per mile, while letters could go 800 miles for less than 1d. per oz.

Promoters may be Busy.

Statistics, according to the cynic, can be made to show anything and prove nothing according to the point of view. There is something in this. One can scarcely expect these estimates to convince the average man; they are not exhaustive enough; there is an absence of detail sacrificed, one supposes, because detail would prove too dry for the average reader. But it is surprising how people are beginning to realise that aeroplanes have commercial possibilities, just as it has been proved that their military potentialities are great. One wonders if this will continue, and if, on the return of peace, the company promoting fraternity will work on this topic to the disadvantage of the Aircraft Industry, and the gullible public, and to their own pecuniary profit?

Aeroplane Postage Stamps.

Mails carried by aeroplane, according to a regulation just announced by the United States Postmaster-General, will be charged with postage at the rate of 16 cents for the first ounce or fraction thereof, and 6 cents for each additional ounce or fraction, of which 10 cents shall be for special delivery service. Such mail shall consist of matter of the first class, including sealed parcels not exceeding 30 ins. in length and girth combined. The postage on aeroplane mail shall be fully prepaid, with special aeroplane postage stamps, or with ordinary stamps. When the latter are used the mail should be endorsed, "By aeroplane."

Something may be Expected.

This is illuminating. It would not be surprising if the Americans were to develop the aerial postal service rather vigorously at a comparatively early date. So far there has been little said on the financial side of the proposition. It will not be long, however, before some of the geniuses of Wall Street propound some important scheme. But not before the war is ended, because new capital issues are regulated by the Government there just as stringently as, if not more so than, in this country.

A Change in Chairmanship.

Mr. B. W. Winder, vice-chairman of Sir Joseph Jonas, Colver, and Co., of Sheffield, has been appointed chairman of the company in place of Sir Joseph Jonas, who recently retired.

Mr. Winder has been with the company for 44 years, for 35 of which he has been works manager.

The Cellulose Affair.

The British Cellulose and Chemical Manufacturing Company, Ltd., have retained Sir E. Carson, Mr. Douglas Hogge, K.C., and Mr. S. T. Barrington Ward to appear on their behalf before the committee announced by Mr. Bonar Law in the House of Commons.

French Government's Scheme.

A machine-tool purchasing agency is just being formed at the instigation of the French Government, the Ministers of Commerce and Armaments being actively associated. The company is to have a capital of 300,000 francs, in 1,000 franc shares, which will be subscribed pro rata by the industries concerned, viz., 60,000 francs by French shipbuilders, 150,000 francs by the Industrial Committee, and 90,000 francs by the French Importers' Committee. People connected with the Aircraft Industry are represented on the directorate. The object aimed at is the centralisation, under the auspices of the State, of the importation and sale and purchase of machine tools.

Zodiac Motor Profits.

From the details that are coming forward, French companies are doing excellently well. The Zodiac Motor Co. is paying a dividend of 9½ francs per share in comparison with 6 francs. The

trading profit figures at 1,463,213 francs, and, after deducting allowances for redemption, etc., purpose, there is a disposable balance of 175,771 francs, against 98,002 francs.

The Delahaye Co. is repeating the 10 per cent. dividend, the profit earned being 3,082,867 francs, of which 154,143 francs is added to the legal reserve, and 2,000,000 francs to the special reserve, leaving 537,460 francs to be carried forward.

The Vinot-Deguing and Co. has taken power to increase its capital from 3 to 4 million francs by the emission of 10,000 new shares of 100 francs, which are reserved for existing shareholders in the proportion of one new for every three shares held. This issue will probably be made during September, and, simultaneously, there will be a division of the reserve fund.

British Internal Combustion.

Formed for the purpose of acquiring a controlling interest in the Aster Engineering Co. (1913) and the whole of the assets of the Green Engine Co., the British Internal Combustion Engines, Ltd., held its first statutory meeting last Wednesday. Sir John F. L. Rolleston, the chairman, remarked :—

The company has been launched in a manner that will, I hope, be satisfactory to the shareholders, and from the insight which I have already had into its working, its prospects, and its probable development, I think that they are to be congratulated on their proprietary interest in it. You will observe from the report sent to you that the whole of the capital of the company has been paid up in full, and that the purchases of the various properties which this company was formed to acquire have been completed. We now hold 57,000 out of the 74,538 issued shares of the Aster Engineering Co. and the whole of the Green Engine Co., both of which companies have had a progressively successful career. It may interest you to know that those chiefly responsible for the past success of these companies, and who are practical experts, are continuing to take an active part in the management and are largely interested in our holding company.

Ample Working Capital.

You will observe that we have ample cash working capital, and this has been provided for the specific purpose of increasing the output of Green engines. From this you will understand that these two companies—the Aster and Green—are continuing their operations as before, but on a larger scale, owing to the financial assistance this company is able to render and the amalgamation of interests which it has effected. The Green Engine Co. is the proprietor of the British, foreign, and colonial patents under which the Green engine is designed and manufactured. In the early days of aeroplane-engine construction the Green engine was famous and was the winner of the Naval and Military prize of £5,000 against all competitors immediately prior to the war.

Large Business in Hand.

The Aster Engineering Co. has from the commencement specialised in the construction of Green engines, and although we have made arrangements which will enable that company to expedite delivery of the orders it has in hand, and undertake further orders, we found that the increasing demands could not possibly be met in this way; in fact, the orders received since the formation of your company have made it necessary for the Green Engine Co. to monopolise the output capacity of two other engineering works of considerable size. In addition to this, arrangements have been made with a well-known firm of engineers to manufacture a large number of Green engines on terms which are quite satisfactory to this company.

Apart from Green engines, the Aster Engineering Co. makes the well-known "Aster" internal combustion engine for the special requirements of several Government Departments, and finds it quite impossible at present to undertake the greater part of the work offered to it by those who have been its regular customers for years. Your directors intend to make a special point of seeing that it and its associated companies shall be in a position after the war to supply internal combustion engines for all purposes, recognising, as they do, the great future before this class of engine.

Post-War Plans.

It is not proposed that this company shall always remain a purely holding company, but that it shall ultimately act as agents and contractors for the supply of complete motor-power sets for various purposes, and, in view of the arrangements we are making and the valuable clientele of our associated companies, we have reason to believe that this trading section of our business will prove satisfactorily remunerative, directly and indirectly.

COMPANY ANNOUNCEMENTS.

The files of the following new companies are available for inspection at Somerset House.

NEW COMPANIES REGISTERED.

L. B. Automatic Devices, Ltd.—Private company. Registered Aug. 12th. Capital, £1,000 in £1 shares. To exploit certain inventions of Leon Le Bozec relating to improvements in (a) check valves, (b) apparatus for feeding petrol, oil and the like to engines or other apparatus, and (c) the filling of radiators, and to acquire from P. M. G. Marechal and F. C. Nestler a licence granted to them by the said L. Le Bozec. The subscribers (each with one share) are :—B. Baines, 17, Green Street, W.C. (2), solicitor; F. C. Nestler, 166, Piccadilly, W., aeronautical engineer. The directors are to be appointed by the subscribers. Registered office :—166, Piccadilly, W.

Sprays, Ltd.—Private company. Registered Aug. 9th. Capital, £100 in £1 shares. Manufacturers of and dealers in spraying machines and apparatus for the application of paint, dope, oil, colour, varnish, chemicals, compositions, etc. The subscribers (each with one share) are :—R. P. Roe, Redclyffe, Patricroft, oil merchant; D. C. Hutchinson, Westholme, Teddington Park, Teddington, manager. The first directors are :—R. P. Roe and D. C. Hutchinson. Secretary :—D. C. Hutchinson. Registered office :—175, Piccadilly, W.1.

Aero Sprays, Ltd.—Private company. Registered Aug. 9th. Capital, £500 in £1 shares. Manufacturers of and dealers in apparatus for spraying, colouring, varnishing, and doping by mechanical means, in connection with aircraft, etc. The subscribers (each with one share) are :—R. P. Roe, Redclyffe, Patricroft, oil merchant; D. C. Hutchinson, Westholme, Teddington Park, Teddington, manager. The first directors are :—R. P. Roe and D. C. Hutchinson. Secretary :—D. C. Hutchinson. Registered office :—175, Piccadilly, W.1.

Promper, Ltd.—Private company. Registered Aug. 10th. Capital, £5,000 in £1 shares. (1,500 10 per cent. cum. pref.) To take over the business of engineers and metal workers carried on by Alfred Promper and Jeanne Monfort at 15A, Ives Street, Chelsea, as "Prompers' Engineering Co.," also to carry on the business of manufacturers of and dealers in aircraft and components and electrical appliances, motor engineers, metallurgists, etc. The subscribers (each with one share) are :—R. J. Coley, A.A.M.E.E.E., 47, Kenninghall Road, Clapton, N., engineer; A. Promper, 12, Richmond Mansion, Denton Road, Twickenham, engineer. The first directors are :—R. J. Coley, E. Le Maitre Mellows, Jeanne Monfort, A. Promper, and T. H. Wurr. The two vendors are Belgian. Solicitors: H. Dade and Co., 14, Queen Victoria Street, E.C.

Securiam, Ltd.—Private company. Registered Aug. 12th. Capital, £6,000 in £1 shares. (2,000 pref.) Manufacturers of and dealers in paints, varnishes, dopes, oils, chemicals, and fireproof goods, etc. Agreement with J. H. Whyte-Hille. The subscribers (each with one ordinary share) are :—H. S. Holt, 6, Gray's Inn Square, W.C.1., solicitor; T. C. Ashcroft, same address, company secretary. The directors are to be appointed by the subscribers.

ADDITIONAL LINES.

The Pulvo Engineering Co., 10, Dane Street, High Holborn, has had to apply for additional telephone facilities owing to the growth of the business done. The telephone numbers now are: —Holborn 409 and 410, and clients are asked to make a note to this effect.

GRAHAME-WHITE BOXING.

Nearly 600 employees of the Grahame-White Company, assembling in the new messroom on Wednesday evening, Aug. 14th, witnessed an excellent boxing tournament which had been arranged under the auspices of the Grahame-White Recreation Association.

The most interesting contest was between Wally Trainer (Forest Gate) and Alf Green (Finsbury). It was decided only by a very small margin, and after ten capitally fought rounds, that Trainer gained a decision.

Other contests were as follows :—Six rounds, E. Owen (Whitehead's) beat H. Thick (Grahame-White); ten rounds, S rjt. Jarvis (A.S.C.) beat Jack Levine; nine-stone competition (final), J. Harnscombe beat Jack Pine; eight-stone competition (final), H. G. Berrard beat A. Melton.

Incidental displays were given by the veterans, Jack Collinson and Billy Ross, the Spiers Midgets, and Billy Tucker, the well-known ball-puncher. Mr. Grahame-White and Mr. H. W. Keen, of "Sporting Life," acted as referees. The judge was Mr. S. B. Riley, the timekeeper Mr H. Holmes (ex-lightweight champion of Great Britain), and the M.C. Mr. W. Goy.

So much interest is now being taken in the boxing section of the Grahame-White Recreation Association that it is hoped to arrange a tournament every month.

THE HANDLEY PAGE SPORTS.

On Saturday, Aug. 24th, a sports meeting, under A.A.A. rules, will be held at Cricklewood by the Handley Page Athletic and Social Club. As the entry lists are now closed, there is not much object in giving, in advance, details of the programme, which is sufficiently varied to meet all requirements.

Admission to the ground is 8d., and to the enclosure 1s. 3d., including tax. Dancing will take place from 7 to 9.30, and admission to the ground for dancing only will be 6d. It is hoped, however, that those who are able to go will patronise the sports also. The prizes will be presented by Mrs. F. Handley Page.

Full particulars may be obtained by those interested from the Sports Secretary, c/o Handley Page, Ltd., Cricklewood, N.W.2.

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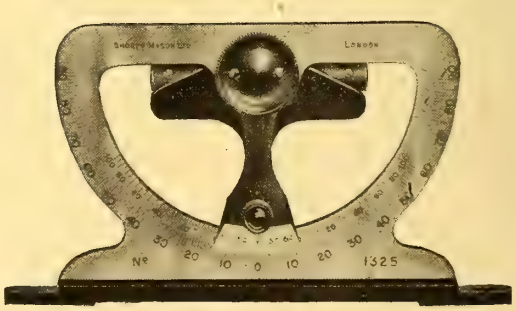
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(*Continued from page 644.*)

and R.A.F.; Partridge, Sec. Lt J. W., R.A.F.; Rubinovitch, Sec. Lt. I. J., R.A.F.; Ryan, Lt. A. E., R.A.F.; Saunders, Sec. Lt. W. H., R.A.F.; Smith, Sec. Lt. W. W., Gord. Highrs., attd R.A.F.; Sutcliffe, Lt. E. I., R.A.F.; Wiltshire, Sec Lt A. T., R.A.F.

MISSING.—Clarke, Sec. Lt. J. K., Conn. Rangers, attd. R.A.F.; Coulson, Sec. Lt. W. E., R.A.F.; Farquhar, Lt. J., R.A.F.; Hollingsworth, Lt. R. L., R.A.F.; Gow, Lt. J. E., R.A.F.; Petit, Capt. S. L., R. Fus., attd. R.A.F.; Williams, Lt. G. J., Hereford R., attd. R.A.F.

Reported Aug. 20th.

KILLED.—Bell, Sec. Lt. L., R.A.F.
Cross, Sec. Lt. A. M., R.A.F
Dulin, Lt. W. W. M., R.A.F.
Lipsett, Lt. G. A., R.A.F.
Ogilvy, Sec. Lt. D. P., R.A.F.
Todd, Sec. Lt. J., R.A.F.

DIED OF WOUNDS.—Galbraith Sec. Lt J. G., R.A.F.

WOUNDED.—Cuningham, Lt. V. G., R.A.F.; Giles, Lt. W. B., R.A.F.; Gregg, Sec. Lt. C. S., R.A.F.; Kirkpatrick, Lt. Y. E. S., R.A.F.; Lewis, Sec. Lt. K. V. C., R.A.F.; Lick, Lt. C. H., R.A.F.; McCarthy, Lt. B. L., R.A.F.; Taylor, Lt. A. B., R.A.F.; Towell, Sec. Lt. W., R.A.F.; Traviss, Sec. Lt. G. G., E. Yorks R., attd. R.A.F.; Van Someren, Sec. Lt. W. N., R.A.F.; Whitehead, Sec. Lt. C., R.A.F.

MISSING.—Brinkworth, Sec. Lt. W. H., Royal Fus. and R.A.F.; Forsyth, Lt. A. F., R.A.F.; Hopperton, Capt. H. R., R.A.F.; Shell, Lt. W. H., R.A.F.; Townley, Lt. D. C., R.A.F.

Reported Aug. 21st.

KILLED.—Burton, Sec. Lt. S. G., R.A.F.
Cannon, Sec. Lt. F. W., R.A.F.
Grimwade, Sec. Lt. S. A., R.A.F.
Hatcher, Sec. Lt. H. B., R.A.F.
Jacques, Lt. H. M., R.A.F.
McHarg, Lt. L. H., R.A.F
Walker, Lt. H. W., R.A.F.

WOUNDED.—Akin, Lt. T. A., R.A.F.; Amatt, Lt. E. G., R.A.F.; Bird, Sec. Lt. F. A., R.A.F.; Bruce, Lt. E. R., R.A.F.; Dempster, Sec. Lt. D. F., R.A.F.; Dendy, Sec. Lt. P., R.A.F.; Dunn, Sec. Lt. J., Cam. Highrs., attd. R.A.F.; Gall, Lt. F L., R.A.F.; Hawkins, Sec. Lt. V. S. G., R.A.F.; Lye, Lt. A. H., R.A.F.; Maclatchy, Lt. R. S., R.A.F.; McAlery, Capt. J. M., R.A.F.; Mellor, Sec. Lt. A. B., R.A.F.; Menendez, Lt. F. T. S., R.A.F.; Pinkerton, Sec. Lt. D. M., R.A.F.; Reynolds, Capt. F. G. B., Bucks. R. (T.F.) and R.A.F.; Robinson, Lt. F. E., R.A.F.

MISSING.—Coombes, Sec. Lt. E. S., R.A.F.; Hammond, Lt. H. L., R.A.F.; Hutchinson, Sec. Lt. W J., R.A.F.; John, Lt. W. A., Sussex Yeomanry (T.F.), attd. R.A.F.; Matthews, Capt. J. W., R.A.F.

CASUALTIES AMONG WARRT. OFFICERS AND N.C.Os. AND MEN OF THE R.A.F. THE DATES ARE THOSE OF THE OFFICIAL LIST

KILLED.

AUG. 15th.—Barnes 114766 1st Pte. A. (Manchester).
AUG. 16th.—Neish 111617 2nd Pte. J. (Liverpool).
AUG. 17th.—Baker 92312 2nd Pte. W. E. (Heaton, Newcastle-on-Tyne).

DIED OF WOUNDS.

AUG. 15th.—Warren 7988 Mech.-Cpl. R. C. (Irthlingborough).
AUG. 17th.—Cooper 75488 2nd A/M T. A. (Carlisle); Davies 5475 A/M C. (Llandudno); Jackson 91097 3rd A/M W. (Bolton); Partridge P/96542 Serjt.-Mech. H. N. (Harrogate); Waterhouse 2440 Serjt. A. N. (Woodbarrow, Wilts.).

DIED.

AUG. 15th.—Flint 236205 1st A/C G. W. (Manchester); Stewart 80328 1st A/M J. M. (Lochwinnoch, Renfrewshire); Trappler 66093 1st Pte. A. E. (Hackney); Walton 148129 1st Pte. I. G. (Newcastle-on-Tyne).
AUG. 16th.—Unsworth 106108 Cpl. W. (Liverpool).
AUG. 17th.—Cooper 207125 1st A/M W. (King's Cross, N.); Egan 109158 3rd A/M J. J. (Queen's Co., Ireland); Scudder 39036 1st Pte. P. (S. Ealing, London); Wigglesworth 127526 2nd Pte. F. (South Bank, Yorks).

WOUNDED.

AUG. 15th—Cummins 77564 Serjt.-Obsr. R. V. (Lanelly); Goldsworth 55997 3rd A/M L. C. (Leyton); Hazell 245207 1st Pte. J. S. (Bradford); Hilton 40486 Cpl.-Mech. H. (Shaw, Lancs.); Jessop 57722 1st Pte. H. (Stoke Newington); McShane 77766 3rd A/M J. (Belfast); Moore 4878 Serjt. W. R. (Poplar); Roberts 240289 Serjt. Mech. F. L. (London).
AUG. 16th.—Jeffrey 54549 3rd A/M F. J. (Tooting); Jones 53100 2nd Pte. A. H. (Clapham Common, S.W.); Moulden 407063 Serjt.-Mech. C. W. (London); Robinson 8834 1st A/M T. S. (West Hartlepool).
AUG. 17th.—Brown 100138 Serjt.-Mech. E. P. (Stoke Newington); Coulson 212088 Serjt.-Mech F. (Belfast); Deighton 67051 Serjt. E. (Cheltenham); Dyke 121180 Serjt. W. G. (Nuneaton); Slater P/17304 Act. Serjt.-Obsr. G. W. (Manchester); Sutton 60889 3rd A/M A. (St. Helens, Lancs.); Whorwood 106021 1st Pte. H (Bordesley, Birmingham); Willis 12354 1st A/M H. H. (Gloucester).

MISSING.

AUG. 15th—Atkinson 238558 1st Pte. W. J. (Clapham Junction); Mackir 245212 1st Pte. P. G. (Dundee); Pratt 100029 Serjt. S. (Tring); Williams 4268 Serjt.-Mech. P. H. (Catheys, Cardiff, Glam.); Wright 63901 Serjt. J. (Hendon).
AUG. 17th.—Aldridge 7044 Serjt.-Mech. H. D. (Leigh-on-Sea, Essex); Ayre 222617 1st Pte. J. S. (Whitehaven, Cumberland); Davies 114691 2nd A/M A. W. (S. Tottenham); Harvey 218848 1st Pte. G. (Clapton, London, N.E.); Malpas 100024 2nd Pte. D. (Helmshore, near Manchester); Nash 10206 Cpl. F. E. (Mansfield); Oliver 7655 Serjt.-Mech. S. J. (Buttland's Wells, Norfolk); Sansome P/52910 Serjt.-Mech. W. (Stone, Staffs.); Shuker 100435 2nd Pte. W. J. (Burton-on-Trent); Tench P/250923 Serjt. G. H. (Wolverhampton), Vredenburg 87896 3rd A/M L. G. (Maida Vale, London).

INTERNED.

AUG. 17th.—Gude 959 Serjt.-Mech. G. W. (Kingston-on-Thames).

PERSONAL NOTICES.

NAVAL.

DEATH.

LLOYD.—Flight Sub-Lt. Seisyllt Hugh Lloyd, R.N.A.S., who was reported missing on Aug. 14th, 1917, is now presumed to have been killed while flying near Ypres. He was the youngest son of Maj. G. W. Lloyd, R.W.F., and Mrs. Lloyd, of Brunant, Carmarthenshire, and grandson of Dr. Lloyd-Owen, of Four Oaks, Warwickshire. He was 19 years of age.

MILITARY.

DEATHS.

BICE.—Lt. E. J. Bice, M.C., R.A.F., who was killed in action on Aug. 8th, was the husband of Dolly (*née* Barder), of 7, Garlinge Road, Brondesbury, and only son of Mr. and Mrs. William Bice, of Melbourne, Australia. He was 27 years of age.

NASH.—Lt. Thomas Stuart Nash, who died of wounds received on Aug. 8th, was born in 1889, the son of the Rev. Cecil Nash, of Kincardine O'Neil, Aberdeenshire. He went to the Straits Settlement nine years ago in the employment of Messrs. Boustead and Co. On the outbreak of war he volunteered for service, and eventually received a commission in the R.F.C. After training in England he went out to the front early this year. His commanding officer writes:—"He was wounded on the 8th inst. in a fight with four enemy machines just after he had brought down one. The German aviator crashed well over the lines, and your son flew down over him. He told me that a German pilot got out of the crash and waved to him, so he could not shoot at him again. He therefore waved to him and started for our lines. He was then attacked by four more enemy machines, and was shot through the back and crashed, but was later picked up by our advancing infantry and sent back to the C.C.S."

MACDONALD.—Lt. Roderick Oswald Corderoy Macdonald, M.C., R.F.A., attd. R.A.F., who was accidentally killed while flying on Aug. 10th in Kent, was the son of Mrs. Macdonald, of 3, Sciennes Gardens, Edinburgh, and of the late Dr. Roderick Macdonald, of Wuchow, China. He was educated at the Royal High School and University, Edinburgh, where he gained his B certificate in the University O.T.C. He received his commission in the R.F.A. on Sept. 4th, 1914, and landed with the 29th Division in Gallipoli in March, 1915, serving later with the artillery in France, where he won the M.C. at the battle of the Somme in July, 1916. In March, 1917, he volunteered as an observer in the R.F.C., and served in that capacity for eight months in France, being sent to Egypt later to qualify as pilot. After being gazetted as pilot he returned to this country for some special instruction, and fell when engaged in aerial photography on Aug. 10th. He had been recommended by the late Lord Roberts for the Consular service, and had been accepted by the Board of Selection.

SHUTTLEWORTH.—Sec. Lt. Shuttleworth, Lancs Fusiliers, attd. R.A.F., was killed in an aeroplane accident on Aug. 16th. The machine got into a spinning nose-dive and crashed. The other occupant of the machine, Lt. E. M. Drummond, R.A.F., of Woodford, Essex, was injured. Mr. Shuttleworth was 24 years of age.

At the inquest held in a Lincolnshire town concerning the accident a witness expressed the opinion that the crash was caused through an error of judgment, though the pilot's abilities were described as above the average. A verdict of accidental death was returned.

SOTHERON-ESTCOURT.—Lt. Arthur Charles Sotheron Estcourt, M.C., R.A.F., who was killed in action on Aug. 8th, was the youngest son of the Rev. E. W. Sotheron Estcourt, of Estcourt, Glos., and Rector of Long Newnton, Wilts.

YOUNG.—Capt. William Barrie Young, R.A.F., who has been accidentally killed while flying in the South of England, was the only son of Dr. and Mrs. Young, of Earlston, Berwickshire. He was educated at Edinburgh Academy and joined the ranks of a Scottish Yeomanry regiment on the outbreak of war, and served with them at Salonika. Later obtaining a commission in the Royal Flying Corps, he was severely wounded during an air fight in France in 1916. He had recently been engaged as instructor at the station where he was killed.

ENGAGEMENTS.

BARRINGTON-KENNETT—MALCOLMSON.—A marriage will shortly take place between Lt. Godwin Austen Barrington-Kennett, King's African Rifles, only surviving son of Col. Barrington-Kennett, J.P., Royal Body Guard, formerly of Tillington House, Petworth, and Beryl Eileen, only daughter of the late Kinloch Malcolmson, of Muckrach, Scotland, and granddaughter of General Sir James Neill, K.C.B.

RUSSELL—CRAKE.—A marriage has been arranged, and will shortly take place in Cairo, between Brevet Lt.-Col. R. E. M. Russell, D.S.O., R.E., attd. R.A.F., second son of Mr. and Mrs. E. M. Russell, of Milford House, Limerick, Ireland, and Dorothy Barrington, twin daughter of the late Maj. E. B. Crake, Rifle Brigade.

WILSON—EVERITT.—An engagement is announced between Capt. C. H. M. Willson, King's Liverpool Regt., attd. R.A.F., youngest son of Mr. and Mrs. A. J. A. Willson, of Waterloo, Liverpool, and Jessie Eunice Everitt, only daughter of Mr. and Mrs. G. B. Everitt, of New Brighton, Cheshire. Capt. Willson has held a commission in the King's Liverpool Regt. since March, 1914, and has served in France and Egypt as an observer, and is now an Administrative Officer with the R.A.F.

MARRIAGES.

BROOKS—ANDERSON.—On Aug. 13th, at Holy Trinity Church, High Hurstwood, Sussex, Capt. Douglas C. M. Brooks, M.C., R.A.F., third son of Mr. Alfred Brooks, Langdon Hills, Essex, was married to Beryl, only daughter of Mr. Herbert Anderson, Hermitage Farm, High Hurstwood.

BURNEY—MOORE.—On Aug. 14th, at the Brompton Oratory, Capt. E. E. N. Burney, M.C., R. Berks. Regt. and R.A.F., only son of the late Col. E. H. Burney, C.B., R.

Berks. Regt., and Mrs. Burney, was married to Sybil Ivy, daughter of Mr. and Mrs. C. M. Moore, of Claygate, Surrey.

MAWER—BENNETT.—On Aug. 17th, at St. Mary the Virgin's, Ardleigh, Lt. Ralph Norman Mawer, Suffolk Regt., R.A.F., third son of the late Harry Mawer and Mrs. Mawer, 15, Cheniston Gardens, W., was married to Esmé Alexandra, younger daughter of the late Lt.-Col. A. C. Bennett, D.S.O., West Yorkshire Regt., and Mrs. Bennett, Ardleigh Park, Essex, by the Rev. R. H. Grubbe.

Births.

CLAYE.—On Aug. 15th, at Great Ponton Rectory, Grantham, to Barbara, wife of Capt. Hugh Claye, Sherwood Foresters, attd. R.A.F., prisoner of war—a son.

CORBALLIS.—On Aug. 15th, at Forest View, Salisbury, the wife of Lt.-Col. E. R. L. Corballis, D.S.O., R.A.F. (and R. Dublin Fusiliers)—a daughter.

LEES.—On Aug. 18th, at 13, Coleherne Mansions, to Capt. (Temp. Maj.) L. W. W. Lees, R.G.A. and R.A.F., and Mrs. Lees (*née* Daniell—a daughter.

PATERSON.—On Aug. 11th, at 62, Fountainhall Road, Edinburgh, to the wife of Lt. Charles John Paterson, Inns of Court, O.T.C. and R.A.F.—a son.

SMITH.—On Aug. 7th, at "Ramsing," Cheam, Surrey, Winifred (*née* Allinson), wife of Lt. Austin Smith, R.A.F., late Dorsets—a son.

* * *

Eric Seth-Ward, Ox. and Bucks L.I., attd. R.F.C., was reported missing on Aug. 10th, 1917, and nothing has been heard of him since. Any information would be gratefully received by his sister, Gwyneth Seth-Ward, Sutmer Court, Chalfont St. Giles, Bucks.

AIR FORCE.

Deaths.

AGNEW.—Lt. Joseph Agnew, R.A.F., was killed while flying in East Kent. At the inquest on Aug. 16th his Commanding Officer stated that Mr. Agnew was a splendid flier, and had seen service abroad. A verdict of accidental death was returned.

BROADHEAD.—A flying accident occurred in East Kent on Aug. 18th to Lt. Frank Broadhead, a well-known resident of West Grimsby. Mr. Broadhead was seen to fall from a great height, and was found dead under the wreckage.

CABBURN.—Lt. Frank Cabburn, R.A.F., who was previously reported missing, has now been reported killed. He was the son of Mr. John Cabburn, a London journalist, and was educated at Alleyn's School, Dulwich, and was employed at the foreign branch of the London County and Westminster Bank, when called to the colours. He had had seven weeks' aerial fighting in France when he was brought down whilst on an offensive patrol over the German lines. He was 20 years of age.

CUNNINGHAM.—A verdict of accidental death was returned on Aug. 17th at a Norfolk inquest on the body of Flight Cadet Ronald Cunningham, R.A.F., who met with a fatal accident while piloting a biplane. Lt. R. E. J. Noble, R.A.F., said the deceased took the machine off all right, but climbed too steeply, and when 300 ft. up attempted a flat turn, and the nose of the machine instantly went down, and it spun to the ground.

HORTON.—Lt. Robert E. Horton, R.A.F., who died on Aug. 12th from injuries received whilst flying on patrol duty, was the son of Mrs. Horton and grandson of T. E. Marshall, of Selhurst, Frinton, Essex. He was 20 years of age.

JAQUES.—Sec. Lt. Harry M. Jaques, R.A.F., who was killed on July 30th, whilst flying on patrol on the Western Front, was the eldest son of Mr. and Mrs. F. W. Jaques, "Clovelly," Gladsmuir Road, Highgate, N.19. He was 18 years of age.

KELLER.—Capt. Roderick Leopold Keller, R.A.F., was killed in an aeroplane accident in Hertfordshire on Aug. 16th. He was 23 years of age.

An inquest was held in Hertfordshire on Capt. Keller. It was stated that on Aug. 15th he was flying a new machine at a height of 5,000 ft., and performed the evolution known as spinning. He tried another at a height of 1,000 ft., but the machine obviously got out of control and struck the ground. A verdict of death from misadventure was returned. Capt. Keller was 25 years of age.

KESTERTON.—Sec. Lt. Thomas Frederick Kesterton, R.A.F., who was killed as the result of aeroplane accident at Eastchurch on Aug. 6th, was the son of Mr. and Mrs. T. H. Kesterton, 137, Castellain Mansions, Elgin Avenue, London, W. He was 26 years of age.

LATTA.—Sec. Lt. Edward Campbell Latta, R.A.F., was killed while flying near Winchester. He is a member of a Scottish family.

MAKER.—A verdict of "Accidental Death" was returned at the inquest on the body of Sec. Lt. W. F. Maker, R.A.F., who was killed while flying in Dorsetshire on Aug. 16th. The machine landed safely in a field about half a mile from the town, and the pilot and observer took tea with some relatives. At 6 o'clock a large crowd collected to witness the ascent. The machine rose a few yards from the ground, but then turned turtle and crashed down, killing the pilot and seriously injuring the observer, Serjt. S. Chapman. It was suggested that some children, who were in the field, may have tampered with the machine.

MANLEY.—Lt. Francis Cyril Churchill Manley, R.A.F., who died on Aug. 11th at an aerodrome in a south east county as the result of an accident, was the elder son of Francis Churchill and Florence Manley, of Holmsleigh, Hessle, East Yorks.

MEEK.—An Eastern counties coroner held an inquest on Aug. 17th on the body of Lt. John Freele Meek, R.A.F., a native of Port Talbot, Ontario, who while flying over the coast fell into the sea from a height of 1,000 ft. An officer who swam out to the wreck said that he found the machine on its back, partly submerged, with Mr. Meek, who was a very capable pilot, strapped in his seat dead.

A verdict of "Accidental death" was returned.

ORR.—Lt. R. S. S. Orr, R.A.F., who was reported killed in action on Aug. 8th, was the eldest son of R. Scott Orr, of Belle Vue, Horsforth, near Leeds. He was 21 years of age.

PERRING.—Lt. Charles Perring, R.A.F., was killed near a south-east coast town while flying a new machine to France. It was stated at the inquest that deceased was an experienced ferry pilot, and the theory advanced was that a pin in the starboard propeller snapped, causing the accident. Mr. Perring was 23 years of age.

PETTITT.—Two aeroplanes, flying over Cheshire on Aug. 13th, collided, and Lt. Malcolm Pettitt, of Orpington, Kent, sustained injuries from which he subsequently died. Two other officers are in hospital.

REYNOLDS and WATSON.—Lt. Francis William Pounsett Reynolds and Flt. Cadet Percy Frederick Watson were badly injured in a flying accident on the North-East Coast. Mr. Watson died a quarter of an hour later, and Mr. Reynolds succumbed in hospital. Mr. Reynolds, who was 25 years of age, resided at Merton Park, Surrey, and Mr. Watson, who was 18 years of age, lived at Rugby.

SEWARD.—Cpl. Norman Seward, R.A.F., who died suddenly on Aug. 10th, while on active service, was the only son of William Wheaton Seward, of St. Neots, Huntingdonshire, and The Highlands, Great Barford, Bedfordshire. He was 21 years of age.

STONE.—Lt. Richard Stone, R.A.F., who was killed while flying in action on Aug. 9th, was the younger son of John M. Stone, of Lincoln's Inn, and Beaconsfield (formerly of Blackheath, S.E.). He was 19 years of age.

Engagements.

PAYNE—HARVEY.—The marriage arranged between Lt. Rawdon S. Payne, R.A.F., and Miss Sylvia Harvey will take place at St. Paul's Church, Knightsbridge, on Thursday, Aug. 29th, at two o'clock in the afternoon. No invitations will be issued, but all friends will be welcome at the church and afterwards at 38, Rutland Gate.

SMITH—NICKSON.—The marriage arranged between Capt. W. Edward Smith, R.A.F., younger son of Mr. and Mrs. Edward Smith, of Leamington, and Miss Olive Merle Nickson, elder daughter of Mr. and Mrs. H. W. Nickson, of Solihull, Warwickshire, will take place quietly on Aug. 21st at Solihull Church.

SPARROW—DENNING.—The marriage arranged between Capt. Arthur Sparrow, R.A.F., and Hilda Vere Denning will take place very quietly on Sept. 3rd at St. George's, Hanover Square.

Marriages.

ATKINSON—ROWAN.—On Aug. 14th, at the Old Parish Church, Ayr, Capt. Edward D. Atkinson, D.F.C., R.A.F., son of the late J. H. Atkinson, of Calcutta, was married to Nancy, second daughter of Mr. and Mrs. David Rowan, Dunskaig, Ayr, Scotland, by the Rev. William Cairns Duncan, assisted by the Rev. Mr. Cameron.

KENT—LAMBERT.—On Friday, Aug. 9th, Lt. Edmund Alfred Wise Kent, R.A.F., son of Alfred William Kent, White House, Kew, was married to Ann Lambert, widow of the late Lt. William Stanley Lambert, R.N.

PETCH—JARRED.—On July 27th at Fulham Registry Office, Lt. George Frederick Petch, R.A.F., of Wandsworth, was married to Ethel Mary Jarred, of Fulham.

SIMONS—GROSS.—On Aug. 7th, at South Woodford, Capt. William Vazie Simons, R.A.F., was married to Madeline (Madge) Mary Gross, of "Normanhurst," South Woodford, Essex.

STANTON—DENNIS.—On Aug. 15th, at Christ Church, Wanstead, Essex, Edgar John Stanton, R.A.F., elder son of Mr. and Mrs. C. E. Stanton, of Wanstead, was married to Monica Amy Turner Dennis, elder daughter of Mr. A. G. Dennis, "Goldsithney," Grove Park, Wanstead.

Births.

CHATER.—On Aug. 14th, at Scotby House, near Carlisle, the wife of Lt. G. P. Chater, R.A.F., of a daughter.

NAPIER

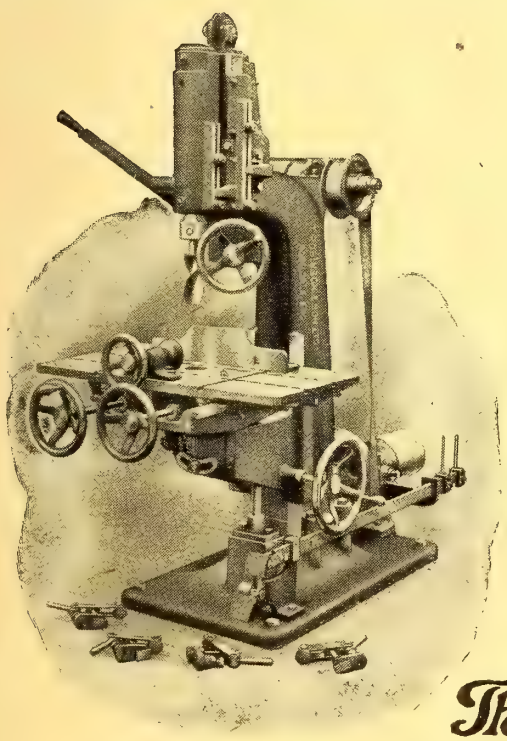
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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

GIBBS.—On Aug. 11th, at 35, Holland Street, Campden Hill, W., the wife of Capt. H. G. Gibbs, R.A.F.—a daughter.

* * *

Reuter's Agency learns that Capt. Jackson, R.A.F., and Lt. Simpson, R.A.F., who landed recently owing to engine trouble in Denmark, and were reported in a German telegram to the "Stockholm Aftonbladet" to have "escaped voluntarily" to Denmark, have arrived at a British port. They are both in good health, and are looking forward to resuming active service immediately.

* * *

Lt. R. H. Gray, R.A.F., of New Zealand, has been missing since July 20th. Any news will be gratefully received by Joseph Nathan and Co., Ltd., 88, Gracechurch Street, E.C.3. Please inquire if writing to Germany.

FOREIGN COMMUNIQUES.

FRANCE.

Aug. 13th.—During the night of Aug. 12th-13th our bombers dropped 29 tons of projectiles on the stations and enemy establishments at Tergnier, Ham, Nesle, St. Quentin, and Noyon. Fires were observed in several places.

During the day of Aug. 12th, 11 German aeroplanes were brought down or put out of action and four captive balloons were destroyed.

Lt. Madon brought down during the night of Aug. 11th his 40th enemy machine.

Army of the Orient.—In spite of a high wind our aviators attacked with machine-gun fire enemy organisations and working parties to the west of Ghevgeli. British aviators bombed enemy bivouacs to the north of this place.

Aug. 14th.—On Tuesday our air squadrons brought down, or put out of action, 12 German aeroplanes.

During the night of the 13th-14th our bombing machines dropped 32 tons of projectiles on enemy objectives at Tergnier, St. Quentin, Ham, Nesle, and Noyon. The bivouacs in the region of Ognolles and the railway stations of Maisonbleue, Guignicourt, and Le Châtelet-sur-Rétourne were heavily bombarded.

Violent fires broke out, especially at Ham and at Noyon, upon which places 15 tons of projectiles were dropped.

Army of the Orient.—Our air service bombarded the artillery encampments to the north-east of Monastir. Considerable losses were inflicted on the enemy. The British air service bombarded encampments north-west of Ghevgeli.

Aug. 15th.—Army of the Orient.—British aviators bombed bivouacs at the north of Ghevgeli.

Aug. 16th.—During the day of Aug. 14th we brought down or put out of action 15 enemy machines and eight balloons, which were set on fire.

Our bombarding squadrons have dropped 32 tons of projectiles in the battle zone and in various regions of the back area. Many railway stations were hit, notably those of Tergnier, Noyon, Mézières, and Thionville.

Lt. Nungesser brought down four observation balloons in flames, which brings to 43 the number of machines brought down by this pilot.

The noise of the motors of enemy aeroplanes having been reported by the watching posts in a northern suburb of Paris last night, warning was given at 10.52 p.m. The enemy's machines were received with heavy firing by the defensive batteries. Many bombs were dropped, and some casualties are reported. The "All clear" was given at 12.36 a.m.

Army of the Orient.—In spite of the bad weather British aircraft bombed enemy organisations and concentrations in the valley of the Struma.

Aug. 17th.—Yesterday 12 German aeroplanes were brought down or driven down out of control. During the night of Aug. 16th-17th our bombing squadrons dropped 15 tons of projectiles in the battle zone, where numerous fires were observed, as well as on the bivouacs, cantonments and stations in the region of Pontavert and Bazancourt.

Aug. 18th.—Lt. Fonck brought down three enemy aeroplanes on Aug. 14th, which brings to 60 the number of machines brought down by this pilot up to date.

Yesterday eight enemy aeroplanes were brought down or driven down out of control and three captive balloons were set on fire. Our bombing squadrons during the night of Aug. 17th-18th dropped seven tons of projectiles on the stations of Bazancourt and Amagne. It is confirmed that on the 8th inst. Sous-Lt. Boyau brought down his 30th flying machine.

Army of the Orient.—British pilots brought down an enemy aeroplane north of Ghevgeli.

Aug. 19th.—Yesterday three German aeroplanes were brought down and one captive balloon was set on fire.

During the night of Aug. 18th-19th our bombing squadrons dropped eight tons of projectiles on the bivouacs in the region of Berry-au-Bec and Guignicourt and the stations of Mézières and Châtelet-sur-Rétourne.

Army of the Orient.—British aviators bombarded enemy camps in the Vardar region and brought down two enemy machines.

GERMANY.

Aug. 12th.—On Aug. 11th, in the forenoon, our reconnoitring aeroplanes stationed off the Frisian Isles and an airship sighted strong British naval forces off Vlieland, composed of at least 25 ships of the line, armoured cruisers, numerous destroyers, and a torpedo-boat flotilla. With them were six fast boats, which apparently had orders to lay mines on a big scale, in co-operation with the torpedo-boats.

Our aeroplanes and airship immediately attacked with bombs and machine-guns the fast boats and torpedo-boats. They succeeded in destroying three of the fast boats and disabling the remainder of them. Moreover, bomb hits were made on one armoured cruiser and one torpedo-boat. The latter was badly damaged and was last seen in a sinking condition.

Our sea forces immediately proceeded to the place of the encounter, but were unable to force the already retreating enemy to accept battle. We lost one airship (Comdr. Proells) and one aeroplane. In the course of the defence and attack the Borkum and Norderney battle squadrons, under the command of Lts. Frendenberg and Hammer, especially distinguished themselves.

Note.—With reference to the above, the Secretary of the Admiralty states that our losses have been correctly stated, and that no ship was hit or damaged in any way whatever.

Aug. 13th.—Yesterday 29 enemy aeroplanes were shot down. Lt. Udet won his 53rd, Capt Berthold his 43rd and 44th, Lt. Baron von Richthofen his 39th and 40th, Lt. Koenneke his 29th, Serjt. Thom his 28th,

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Lt. Laumann his 24th, First Lt. Baron von Boenigk his 21st, and Serjts. Doerr and Mai their 20th aerial victories.

Aug. 14th.—Lt. Bole obtained his 30th, Ober-Lt. Loeger his 29th, and Lt. Roeth his 20th aerial victory.

Aug. 15th.—Yesterday 24 enemy aeroplanes and one captive balloon were shot down.

A British bombing squadron, which was on its way to make a raid on home territory, was engaged by our chasing forces before it reached its objective, and was forced to return after the loss of five aeroplanes.

Aug. 16th.—Yesterday we shot down 24 enemy aeroplanes. Lt. Udet achieved his 54th and 55th, First Lt. Koenneke and Loerzer their 30th, Lt. Neckel his 22nd and 23rd, and Lt. Seth his 21st aerial victories.

Aug. 17th.—There was lively aerial activity over the battlefield. Lt. Udet gained his 56th aerial victory.

Our chaser aeroplanes shot down four large English aeroplanes which attacked Darmstadt with bombs.

ITALY.

Aug. 14th.—Aeroplanes and airships of the Army and Royal Navy bombed hostile aviation camps and railway establishments. Two enemy machines were brought down in air fighting.

Aug. 14th.—Aerial activity was intense. The hutments, magazines, and railway establishments of Fucine and of Cusiano, in Val di Sole (Tonale), were effectively bombed by our machines.

Aug. 15th.—Our own and Allied aeroplanes during the day and airships during the night bombed military objectives in the enemy's lines of communication. A hostile aeroplane and a captive balloon were brought down.

Aug. 16th.—Four hostile aeroplanes and a captive balloon were brought down in air fighting.

Aug. 17th.—During the nights of the 15th-16th and 16th-17th our Army and Navy airships bombarded with success military objectives in the rear areas of the enemy

Two hostile aeroplanes were brought down

Aug. 18th.—The activity of our own and Allied aviators was during the day considerable. An enemy machine was brought down.

Aug. 19th.—During the day yesterday our bombardment machines effectively bombarded with nearly 2,000 kilogrammes (about 2 tons) of bombs enemy aviation camps.

On Aug. 11th numerous naval chasing squadrons bombed military objectives at Parenzo (Istria) and dropped 3,000 kilogrammes (about 3 tons) of explosives. One hangar is known to have been destroyed, and several fires were also observed in the neighbourhood of military works.

On the night of Aug. 15th-16th naval aeroplanes took part in aerial bombing actions across the Lower Piave on the enemy's back areas. Others bombed with visibly successful results the arsenal at Pola and a torpedo-boat anchorage.

On the morning of the 16th British aeroplanes bombarded the aerial station at Durazzo, causing fires, and shortly afterwards naval planes bombed steamers at anchor in the harbour. Other naval machines bombed the works and harbour of San Giovanni di Medua (north of Durazzo), and dropped in addition half a ton of explosives. Durazzo was again bombarded in the night with useful results.

On the 17th a naval squadron dropped manifestoes on Zara and the neighbouring islands.

We suffered no losses in all these operations.

U.S.A.

Aug. 13th.—On Aug 11th and 12th our aviators successfully bombed the railway yards at Longuyon, Dommary, Baroncourt, and Conflans. All our machines returned.

Aug. 17th.—Yesterday in Lorraine one of our aviators shot down a hostile machine.

TURKEY.

Aug. 9th.—On the entire front there was weak artillery fire and great air activity.

Aug. 12th.—One of our aerial squadrons dropped 150 bombs on an enemy encampment at Tafile (south of the Dead Sea, held by the Arabs) and to the west of Maan.

Aug. 13th.—There was great aerial activity. Our aviators dropped numerous bombs on enemy encampments south of Tafile, and good results were observed.

Aug. 14th.—On the front as far as the east of Jordan there was at times a good deal of aerial activity.

BULGARIA.

Aug. 11th.—After an air fight the German aviator Finzeler brought down an enemy aeroplane, which fell in flames in the rear of the enemy's positions east of the Tcherna, thus securing his 11th aerial victory.

BELGIUM.

Aug. 17th.—Sous-Lt. Coppens brought down in flames on the same day three enemy balloons, bringing to 25 the number of his victories

THE WAR IN REVIEW.

Canadian Aviators in the Somme Battle

The following is taken from a dispatch from Mr. Roland Hill, official correspondent of the Canadian Ministry with the Canadian Forces in the Field, to Sir Edward Kemp, Minister for the Overseas Military Forces of the Dominion :—

Canadian pilots whom you can find in nearly every squadron in this fighting have been having what they call "the time of their lives." One Overseas flier, I hear from his comrades, has a record of five planes downed on Thursday afternoon, although clouds were low and flights were dangerous and difficult. One young Canadian who left Canada only two months ago, and arrived in France last week, started his record by getting three Boches the first day he was up.

One of the neatest tricks the pilots have done has been to fly low near the advancing whippets and screen the way for them with smoke bombs. They have also dropped messages close to the Tanks, giving information of enemy strong points.

Four of our bombing machines, of which three pilots were Canadians, had a terrific fight on Friday morning, when they were surprised by 30 Hun planes. They managed to crash two of their opponents in breaking through, but two of our machines were also vitally hit, although they made safe landings near the Canadian machine-gun posts. Both pilots and observers won their

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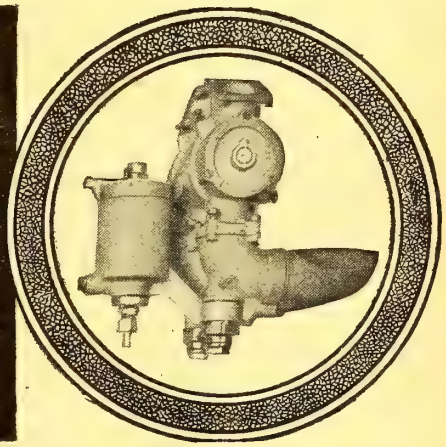
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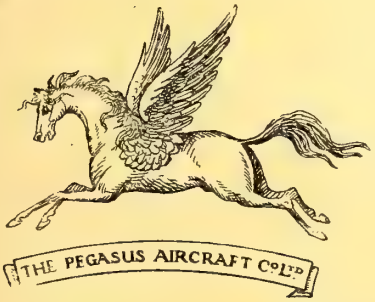
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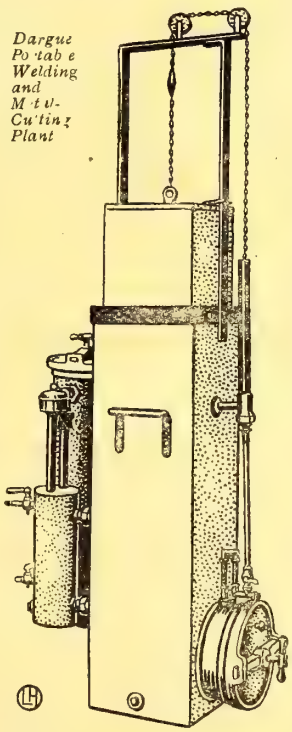
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way back through the battle line, and in the afternoon were back again with fresh machines.

An Attempted Escape.

The Richmond (Yorks) correspondent of the "Leeds Mercury" reports on Aug. 20th that German prisoners have been recaptured while attempting to escape in an aeroplane.

A British Mission.

It is reported that members of the British Aviation Mission now in Rome visited a number of local establishments on Aug. 18th and flew over the city in a military airship.

No Smoke without Fire.

The Zürich correspondent of the "Giornale della Sera" (Rome, Aug. 12th) is informed that the municipal authorities of Berlin are taking elaborate precautions against Allied air raids, which are expected to occur in the near future. All the most valuable objects in the museums and art galleries have been removed to a place of safety, secure shelters for the people have been designated, and in some parts of the capital even dug-outs are being prepared.

An Escape From Internment.

A message from Copenhagen states that an aeroplane was driven ashore on July 23rd near Ringköbing in a damaged condition. It is supposed to be one of the British machines from the raid against Tondern.

One of the British aviators who, together with two others, was interned at Esbjerg, succeeded in escaping.

Another German Ace Killed.

The "Neue Badische Landeszeitung," of Mannheim, reports on Aug. 13th that Lt. Hans Pippard, alleged to be the winner of twenty-one air victories, has been killed.

Wonderful Archies.

A Karlsruhe telegram of Aug. 16th to the "Frankfurter Zeitung" says:—

Mannheim and Ludwigshafen were attacked to-night by enemy aviators. Some material damage was done, but there were no casualties. This morning also a large number of enemy aviators attempted to attack Mannheim and Ludwigshafen, but they were prevented from dropping bombs by our anti-aircraft fire. Three enemy machines were shot down.

[Some guns, those which prevent aeroplanes from dropping bombs.—Ed.]

Stolen Property.

"Ekstrabladet," of Copenhagen, reports on Aug. 5th that the two German aeroplanes used by Professor Nicolai and his comrades on their flight from Germany have been returned to the German military authorities by rail. It is stated that the machines were regarded as stolen goods, and, therefore, could not be interned.

[Also they were not on a war-like mission.—Ed.]

The Late Comdr. Strasser.

The "Daily Express" publishes the following details of the career of the late Comdr. Strasser on Aug. 17th:—

Further information is available concerning Comdr. Peter Strasser, who was lost with the super-Zeppelin brought down in the abortive raid on the English coast last week. It was already known that he held a prominent place among airship captains, but statements implying that he was originally a captain in the merchant navy are founded on a misapprenhension.

He entered the German Navy as a cadet in 1894, and after a brilliant career as a gunnery and navigating officer he became chief of the German airship service in 1913, a post he held until his death. He was always a regular naval officer.

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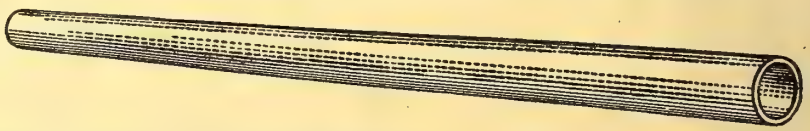
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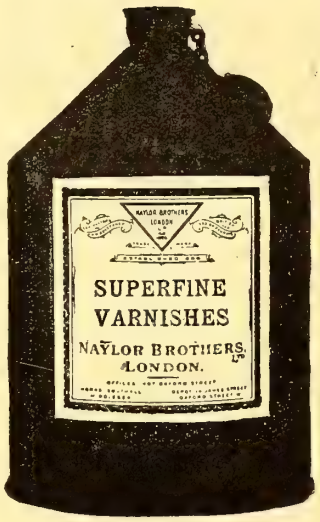
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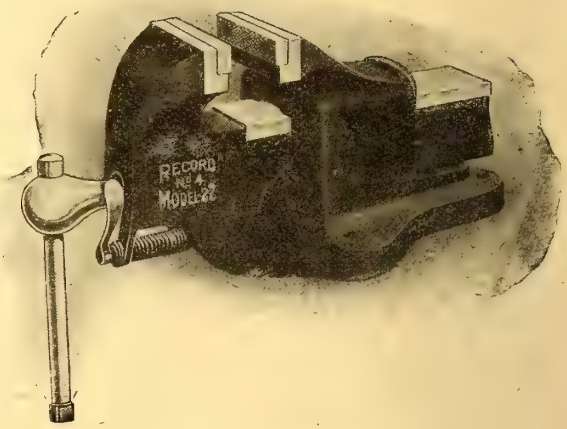
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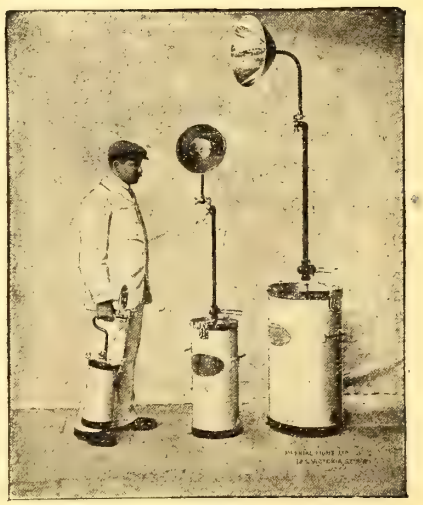


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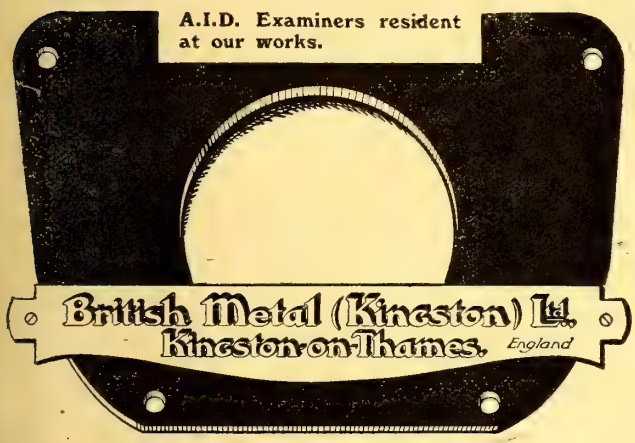


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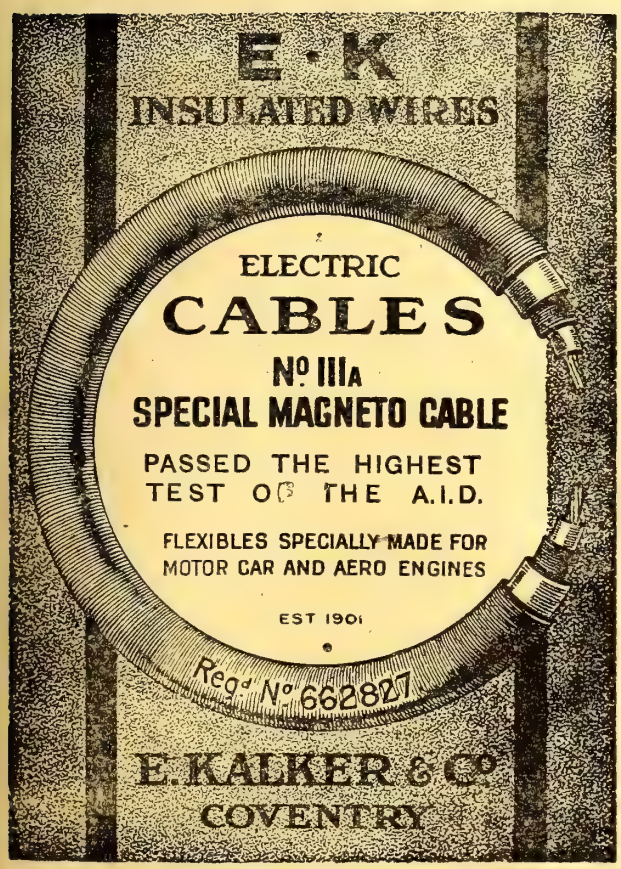


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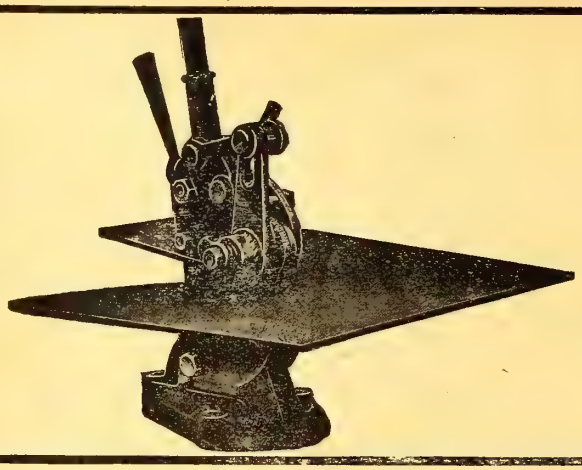
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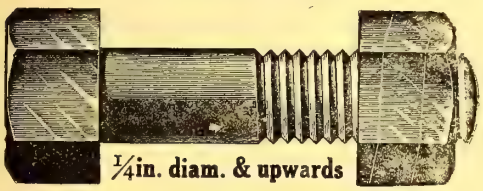
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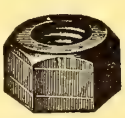
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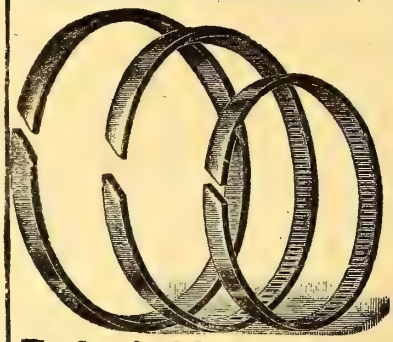
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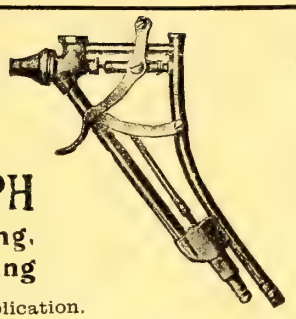
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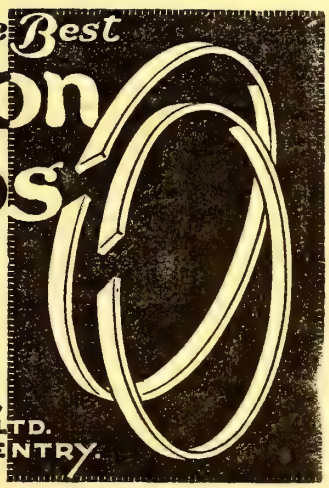
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THE AEROPLANE

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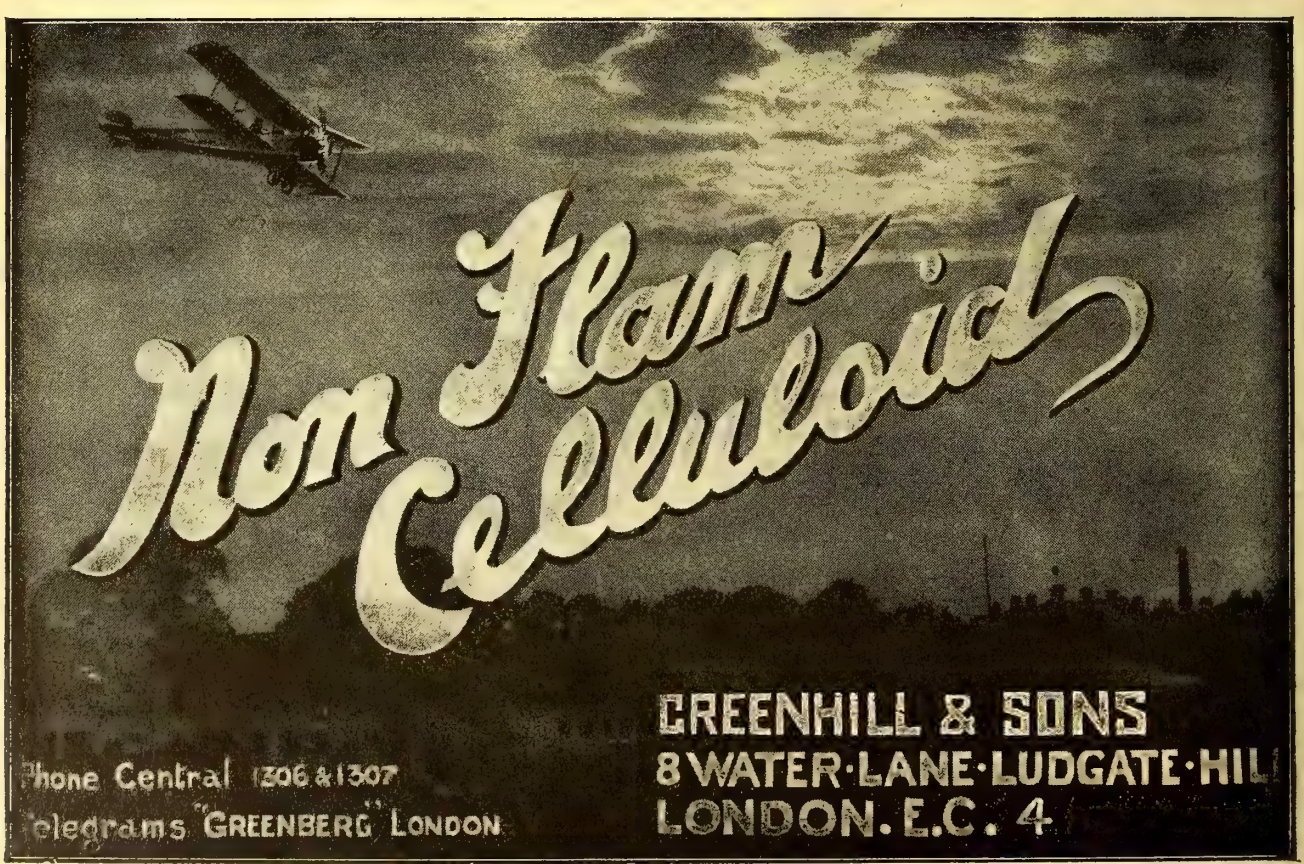
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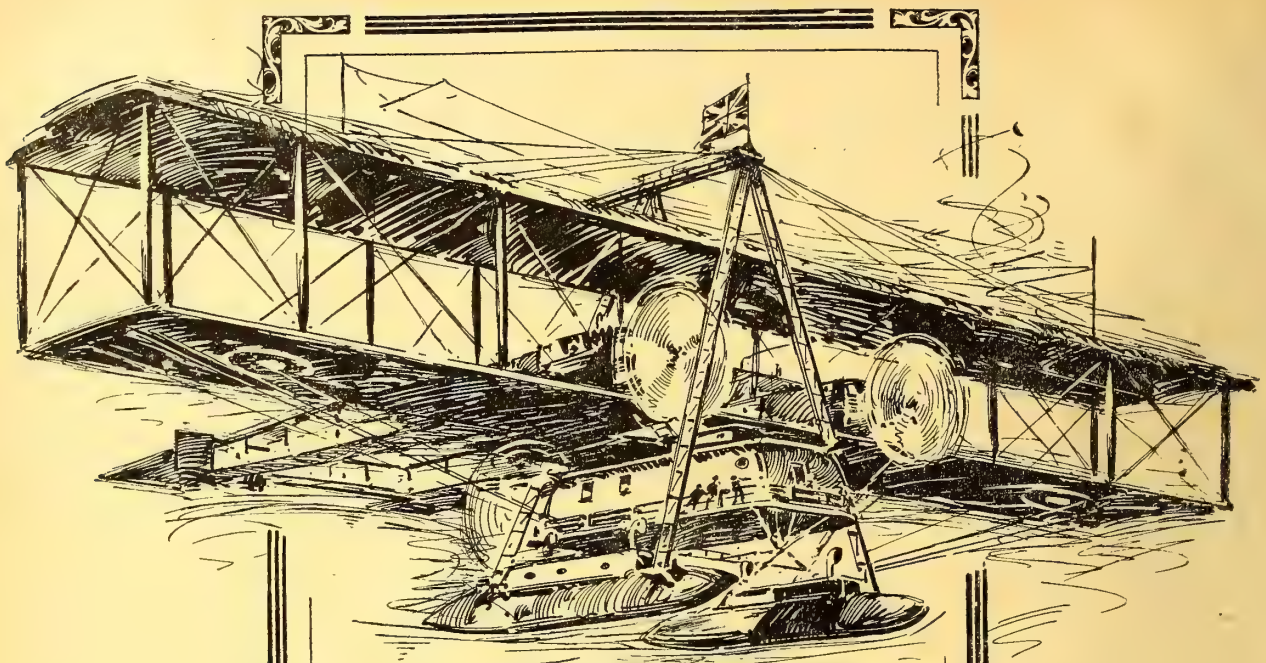




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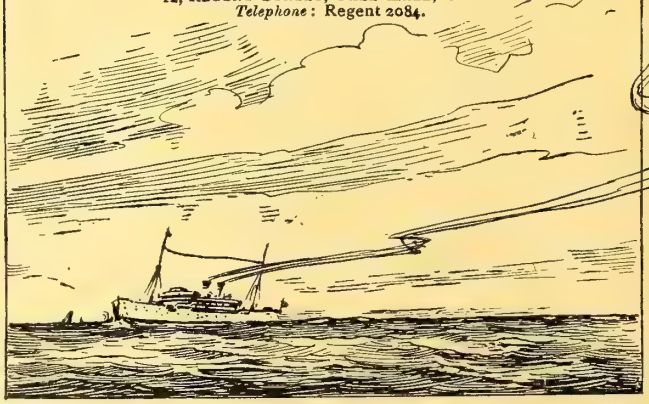
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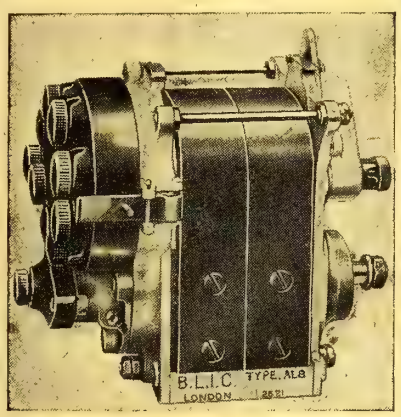


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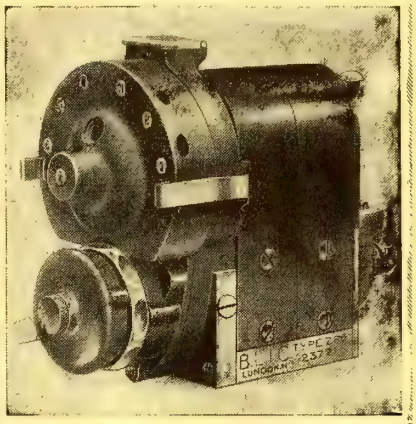
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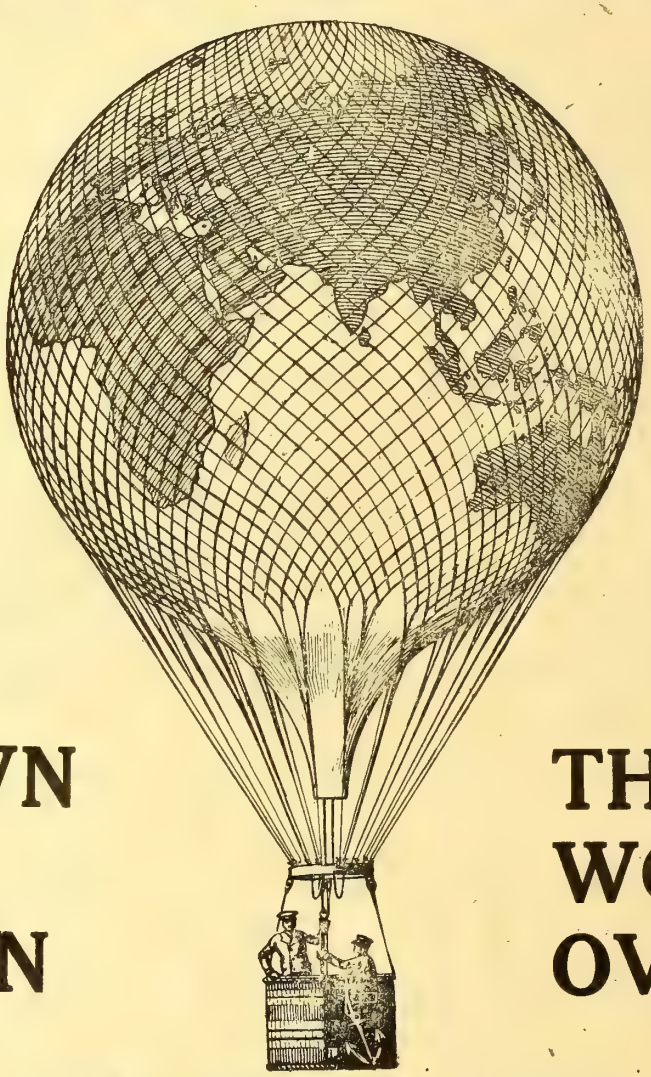
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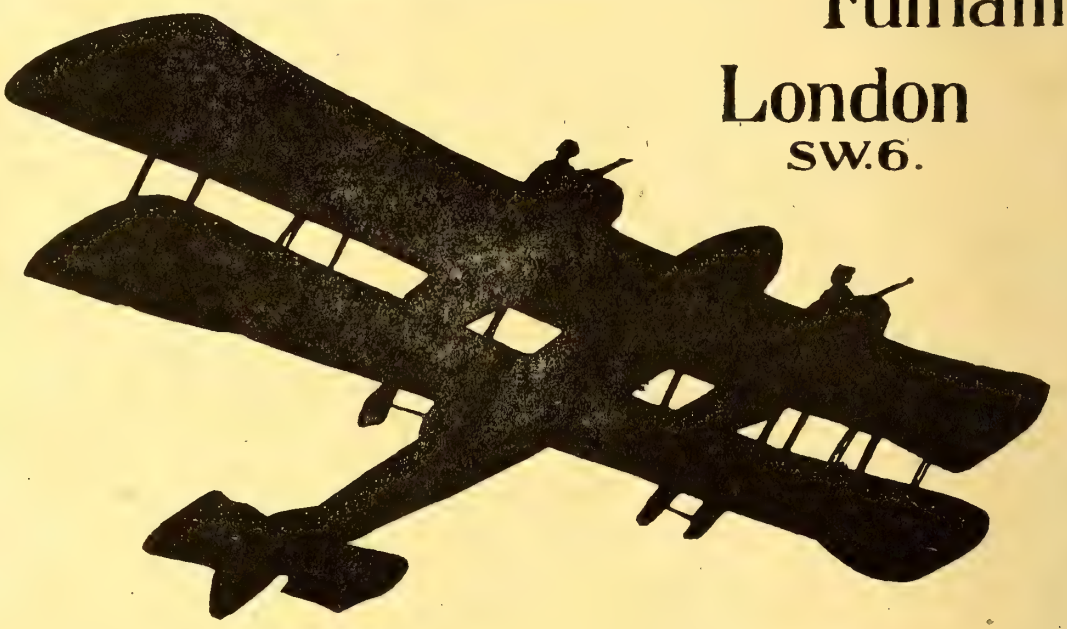
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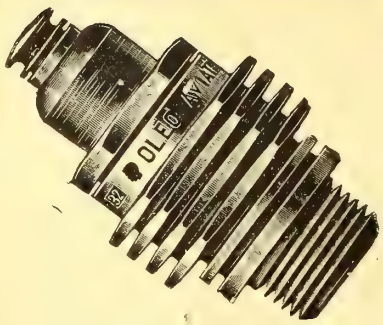
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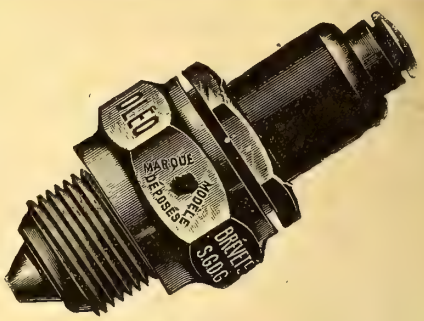
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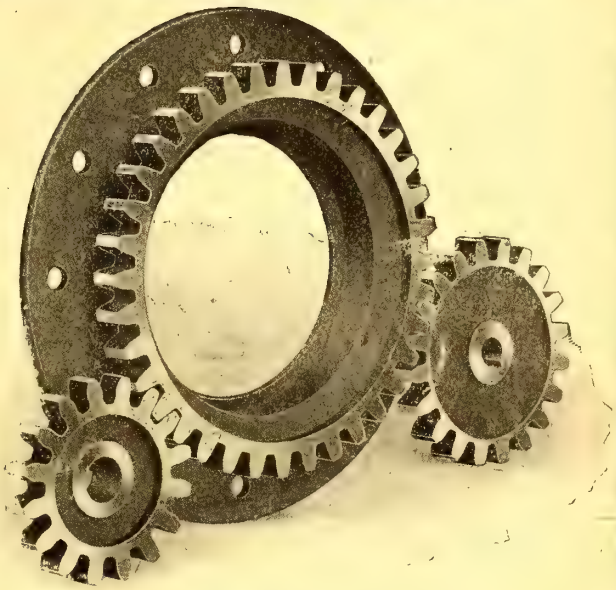
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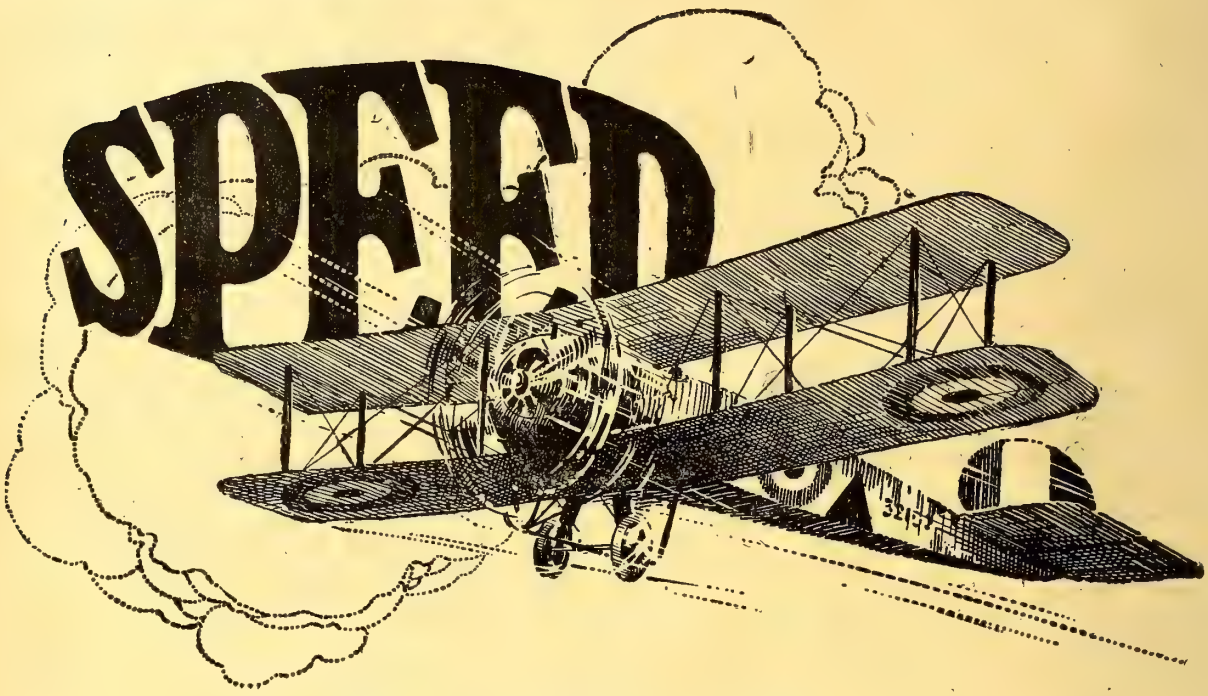
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Accounts, and all correspondence relating thereto, should be sent to the Registered Offices of The Aeroplane and General Publishing Co., Ltd., Rolls House, Breams Buildings, E.C.4.
Subscription Rates, post free: Home, 3 months, 7s. 6d.; 6 months, 15s.; 12 months, 30s.
Foreign, 3 months, 8s. 9d.; 6 months, 17s. 6d.; 12 months, 35s. Canada, 1 Year, $8.
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ON FLYING THE ATLANTIC.

It seems that quite a considerable amount of interest is being taken by quite a considerable number of people in the subject of flying the Atlantic. It so happens that the subject is directly concerned with winning the war, though from what one hears and reads in some places one might be led to believe that it is more concerned with winning a prize of £10,000 offered some years ago by the Baron (now Viscount) Northcliffe, and duly advertised in the "Daily Mail," to the first person to cross the Atlantic by air.

Flying the Atlantic is directly concerned with winning the war because if we—that is to say any of the Allies—can evolve an aeroplane and the necessary engines capable of crossing the Atlantic, it should then be possible to fly whole fleets of similar machines across and thus save much shipping space, as well as a vast amount of labour which would be needed to assemble American-made parts on this side of the water if the machines were sent over by ship. Also, it will be evident, even to the habitual believer of the daily papers and others of a low order of intelligence, that the trans-Atlantic aeroplane is also the Berlin-and-back aeroplane. Therefore one may legitimately discuss the subject of flying the Atlantic in this paper.

A Yankee Spoof.

First of all, one feels it to be one's duty to congratulate that amusing American paper "Flying" on quite an elaborate spoof story of how the Atlantic was flown in 24 hours and 10 minutes, on July 28th and 29th last, by a machine which started from Newfoundland and landed at Dingle Bay in the County Kerry. According to the yarn, the flight was made to celebrate the birthday of Mr. Alan R. Hawley, the chairman of the Aero Club of America.

A most elaborate chart, alleged to have been prepared by Admiral Fiske, of the U.S. Navy, is published, showing the various courses which might be taken across the Atlantic, and the course supposed to have been taken by the spoof-machine. Judging by the course shown, one imagines that the person or persons unknown who drew it had been celebrating Mr. Hawley's birthday to good purpose, for it reminds one of the classic story of the gentleman who was progressing down the Strand, taking in his course all the pavement and half the road. To him a friendly policeman remarked: "Come on, guv'nor! Keep on the footpath, or you'll be run over by a 'bus or something." And the merry-maker replied solemnly: "Keep on the (hic) footpath!! D'you think (hic) I'm Blondin?"

It was quite a clever notion to show such drunken deviations from the tight-rope course laid down by Admiral Fiske. They indicate how thoroughly popular Mr. Hawley and his birthday party must have been. But the spoof might have been much more complete if a few obvious solecisms had not been admitted to the story. For example, at one point in the alleged pilot's log it is noted that the machine was then at a height of 15,000 feet. Of course, that gives the whole show away at once, for, although it is not definitely stated, one assumes that the machine and its engines were built in America. Writers of spoof stories ought always to keep within the bounds of the eternal probabilities.

The Fall of the London Papers.

However, "Flying" can congratulate itself on having "sold a pup" to practically the whole London daily Press, who, to use an expressive Americanism, fell for the story almost to a man. All the good editors were telephoning all over the shop to all their pet "experts," asking why the Government was keeping this marvellous performance dark, and what was the make of this wonderful American "battle-plane"—the daily paper man loves to call any big machine a battle-plane, happily regardless of the fact that a big aeroplane is precisely the kind which is useless in a battle.

The "experts" prevented them from giving themselves away *coram publico,* but in some cases it was hard work to convince them that the whole thing was simply a gaudy spoof. Even highly technical journalists in certain cases tried to argue that the yarn was true, and attributed the fact that it had been kept dark to the Machiavellian subtlety of the Air Ministry. Some people would believe a carburettor salesman or any other breed of gas-merchant.

Anyhow, "Flying," of New York, has really scored a success, and has advertised itself to quite an extent among the British aviatic community. Only it is a pity that the yarn was not edited by someone who knew something about modern aeroplanes. It might easily have been made so much more plausible if the writer had known how to perform that simple operation known to theatrical scene-shifters as "joining his flats."

Competitions in War Time.

Let us then consider in a general way the question of flying the Atlantic in accordance with Lord Northcliffe's desire that some one should deprive the "Daily Mail" of £10,000.

In the first place, it is obviously impossible to permit unrestricted competition for the prize, the reason being that there happens to be a war on. If such competition were permitted, every freak designer who could persuade some innocent capitalist desirous of self-advertisement to finance him would have to be let loose with unlimited class A Certificates, Priority Notes, and other special concessions, and the whole supply of labour, material, and machinery for our regular aeroplanes-of-war would be upset. For one may take it for granted that dozens

of our good war-profiteers would jump at the chance of appearing in the "Daily Mail" as pseudo-patriots who were gambling their hard-earned profits on a trans-Atlantic aeroplane.

At the same time, if the Government sees fit to encourage limited horse-racing, with its accompaniment of bookies, touts, tipsters, get-a-bits, stumers, and so forth, with a view to encouraging the breeding of Army horses, one fails to see why limited aeroplane competitions should not be encouraged with a view to encouraging the breeding of aeroplanes for the Royal Air Force.

From time to time there has been talk of official competitions for machines of approved designs, seaplanes, bombers, fighters, and what not, with big orders as prizes: but in the end all these competitions have petered out, and the orders have gone to the most favoured firms, or to the firms with the biggest pull, rather than to the best aeroplanes. One can point to at least four specific instances of this, if anyone concerned with the Air Ministry feels disposed to challenge the statement. Yet, if the promised competitions had been held, and fairly and squarely run, the breed of British aeroplanes, good as they are to-day, would have been much better.

Therefore, it seems highly probable that if the trans-Atlantic competition were genuinely held, under due limitations, it would most certainly improve the breed of the machines which we require for the invasion of Germany next year.

How a Trans-Atlantic Competition Would Work.

Obviously, as already mentioned, everybody could not be let loose on a trans-Atlantic competition machine. It would even be inadvisable to let every established and successful aeroplane manufacturer enter for it, because the building of a huge trans-oceanic machine would detract seriously from the output of the smaller but even more necessary reconnaissance and fighting machines. Therefore it would be necessary to restrict entries to those firms who are already recognised as successful, or at any rate promising, designers and/or producers of the bigger types of aeroplanes.

One can name off-hand at least seven well-established and thoroughly reliable firms who have already produced large multiple-engined aeroplanes with success. All these machines have had performances far better than any contemporary German machines, though some were built three years ago and have never been used on active service. All those firms, and perhaps one or two others, should be permitted to compete, but only on the understanding that their competition machines would be ready by a specified date.

One fears that these suggestions are in fact useless, for it would take at least three months to build such a machine, and there remain only eight or nine weeks in which one can reasonably expect proper weather for flying the Atlantic this year. Also, it must take the Air Council at least six weeks from now in which to make up its mind whether it will permit or encourage or organise or insist upon or forbid such a competition.

Therefore it seems quite likely that in the course of the next month someone or other will make the attempt on a "most-favoured firm" basis, rather than in fair and open competition with other firms of proved ability. However, there is always the chance that any attempt made this year may be a failure, so one submits the foregoing and following suggestions for consideration because a failure this year would be the best possible argument in favour of a properly organised competition for next year.

The Government's Duty.

With all due recognition of the keenness of our gallant Allies across the Atlantic and of the part played by the Wright Brothers and Mr. Glenn Curtiss as pioneers of flying, it must be admitted, even by Government officials, that it is highly desirable that a British aeroplane with British engines should be the first to fly the Atlantic. Therefore it is obviously the mere duty of the Air Ministry, in view of after-the-war trade as well as of the improvement of the breed of British aircraft-of-war, to do its utmost to get an all-British aeroplane across the Atlantic first.

Whether the maker or the pilot is allowed to take Lord Northcliffe's £10,000 is purely a detail affecting the "Daily Mail," but whether the machine which gets across first is British or not is a matter of prime importance to the British Aircraft Industry, and consequently to the British nation. One hopes that this aspect of the question has been considered by the Government, for on it depends to quite a considerable extent the ability of the British Aircraft Industry to bear its share of taxation after the war. It is well to remember that a Handley Page aeroplane built in America and fitted with Liberty engines is an American aeroplane, and may be legitimately advertised as such in neutral countries during and after the war. The point is very well worth considering.

Simple Competition Regulations.

Assuming, however, that any attempt made this year fails to reach Europe, or even if it succeeds for that matter, the Government's proper course is very plain indeed. By the end of September at latest it should be announced to the selected seven or eight firms that they may, if they wish, enter for the trans-Atlantic competition of 1919. Also, the firms should be told what engines will be allotted to them.

Their complete designs should be submitted to the Technical Department not later than December 1st. And it should be clearly understood that these are to be long-range bombers provided with extra removable tanks for the Atlantic flight, and not purely freak Atlantic machines with tanks permanently incorporated in the aeroplane.

The machines should be ready for test by March 1st, 1919.

During March eliminating trials should be held along an overland course equal in length to the distance across the Atlantic. These trials should be held with due regard to the fact that a dud engine allotted by a Government department does not necessarily condemn a perfectly good aeroplane designed and built by a free and independent aircraft firm. This point seems to have been forgotten in ordering or refusing certain aeroplanes in the past.

The Slight Organisation Needed.

The machines which pass these eliminating trials should be taken to Newfoundland at the Government's expense. There is no shortage of cargo-space on outward journeys, so the shipping difficulty is no excuse. There they should be assembled and tested by the firm's own people. And they should all be ready to start by a certain fixed moment on a certain day in April or May. If that day proved unsuitable, they should be kept in readiness to start whenever the officer in charge of the competition received word by wireless that the weather was right. He would give them all two hours' notice of the starting time, and whether a machine started at the "zero" time or not would be entirely a matter concerning its own funeral.

The total amount of organisation and organising power necessary to run such a competition properly and to

make all arrangements here and in Newfoundland would be rather less than that needed to run an Infantry Brigade with success. Therefore, when one considers the undoubted advantages which would accrue to all concerned, from the Air Minister himself downwards to the most junior worker employed by the successful firm, one cannot see any reason beyond our natural and national pigheadedness why we should not set to work and make a proper job of such a competition forthwith.

The Huge Effect Obtainable.

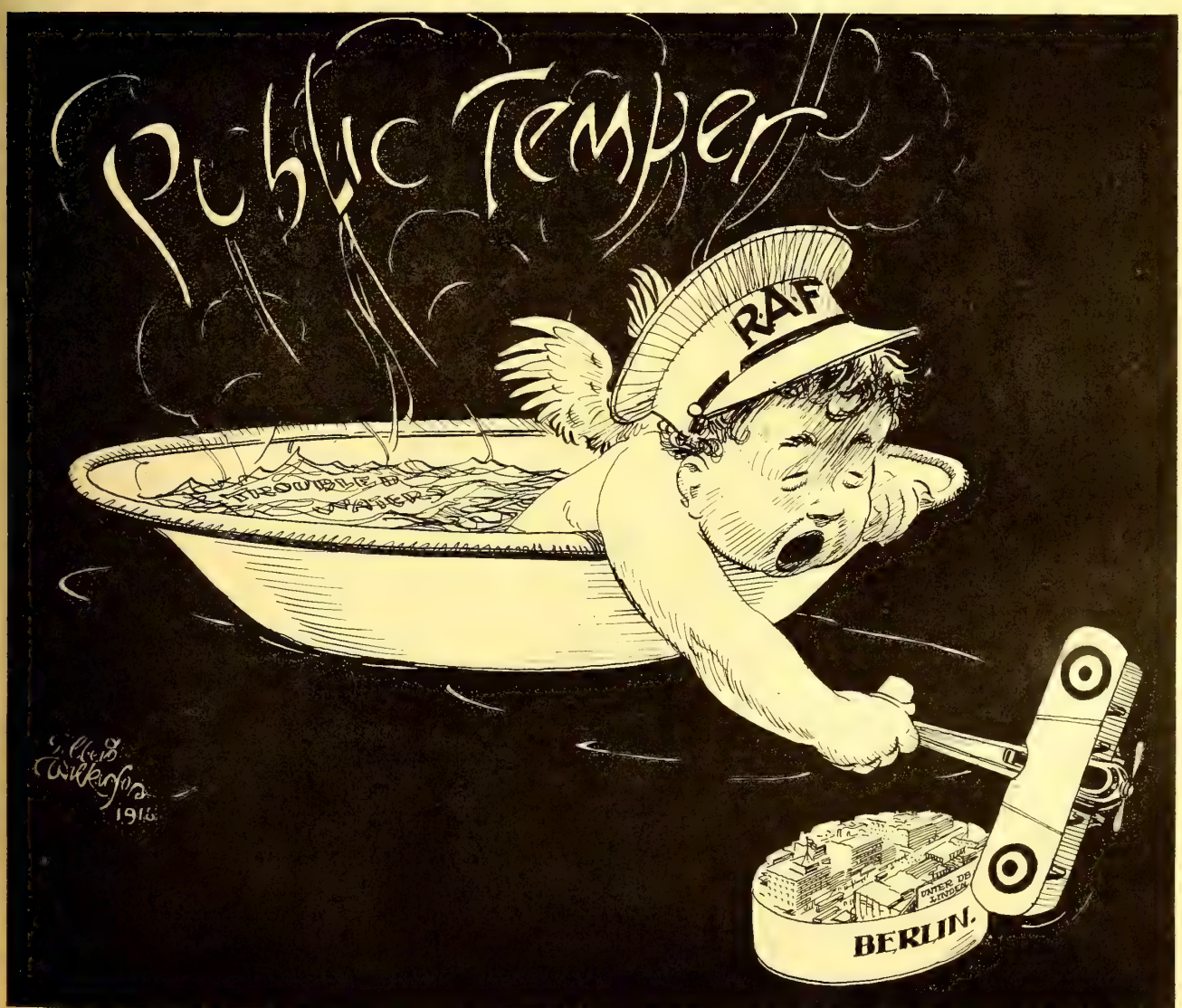
Consider the effect of possessing such machines as would be produced by such a competition. Foolish optimists imagine that the war will be over this winter, because, according to them, Germany must collapse. Personally one has too much respect for our nearest blood-relations, the other Teutonic tribes, to expect anything of the sort, much less to anticipate it. But even if it should be so, we should at any rate have in process of construction a number of the finest big postal and passenger-carrying aeroplanes in the world, and we should be that much to the good.

The probability is, however, that the German Army will retreat during this autumn over good dry roads, to well-prepared positions far in rear of the present battle-fields, leaving the Allies the task during the winter of rebuilding roads and railways in the devastated areas left by the retreating Germans. Then next year our Armies will have the job of breaking through well-rested German troops reinforced by Austrians, Turks, and Bulgars, as well as by German prisoners released from Russia and exchanged from England and France, and by Russians pressed into the German service. Also by that time Germany will be feeding herself and drawing raw material for munitions out of Russia and Roumania.

The Need of the Independent Air Force.

Therefore, the value of big long-range bombing machines will be greatly enhanced, and if the able General Officer Commanding-in-Chief the Independent Air Force can be provided with adequate fleets of machines of the trans-Atlantic or Berlin-and-back type he will be able to produce a moral and material effect which will affect very considerably the course of the war on whatever new front the German High Command may choose to give battle.

To-day, very many months after that letter was published, we have an Independent Air Force just beginning to do what was recommended in a certain "Open Letter to the Air Board" which appeared in this paper last year. It will be interesting to see whether the principle of a competition for Berlin-and-back aeroplanes will be adopted by the Technical and Supply Departments of the Air Ministry in time for the campaign of 1919, or that of 1920.—C. G. G.



THE I.A.F.:—HE WON'T BE HAPPY TILL HE GETS IT.

AIR MINISTRY APPOINTMENTS.

Aug. 23rd.—His Majesty the King has approved the appointment of Maj.-Gen. Sir Godfrey Paine, K.C.B., M.V.O., to the post of Inspector-General of the Royal Air Force, and, under the powers conferred by the Order in Council dated May 11th, 1918, the Secretary of State for the Royal Air Force has appointed Sir Godfrey Paine to be an additional member of the Air Council.

His Majesty the King has appointed Maj.-Gen. W. S. Brancker to be Master-General of Personnel, in the place of Maj.-Gen. Sir Godfrey Paine.

His Majesty has also appointed Maj.-Gen. E. L. Ellington, C.M.G., to be Controller-General of Equipment and a member of the Air Council, in the place of Maj.-Gen. Brancker.

Sir Godfrey Paine, who has hitherto been Master-General of Personnel, may be best described as one of the founders of the Royal Air Force, having been the first Commandant of the Central Flying School on Salisbury Plain, where the excellent system of training established under his control, with the assistance of Maj. Hugh Trenchard as his Chief of Staff, laid the foundation for the R.F.C. of yesterday and of the Royal Air Force of to-day. The precise duties of an Inspector-General are not made known, but one feels sure that much good will accrue to the general efficiency of the Royal Air Force as a result of a general inspection of the Force by Sir Godfrey Paine.

Gen. Brancker, who has recently returned from America, should make an excellent Master-General of Personnel, for though he is a Gunner and therefore has had a highly technical training, he has always shown himself to be an excellent controller of men. Those who heard, or read, his lecture on the training of aviators, which he delivered to the Aeronautical Society early in 1917, will need no further proof of his ability to understand the psychology of aviators. He himself is a most persistent cross-country flier, and is therefore thoroughly in sympathy with the men who fly.

Gen. Ellington, who becomes Controller-General of Equipment, was one of the first General Staff officers to become associated with the R.F.C., and he served on Gen. Henderson's Staff for a considerable time before the war. Though not actually a technical man, his thorough soundness as a Staff Officer and his proved ability as an organiser should guarantee his being a success in his office, which, incidentally, he has occupied for some time as locum tenens during Gen. Brancker's absence.

THE R.A.F. REGATTA.

On Aug. 24th a regatta and carnival was held at Sheppertonon-Thames in aid of the Royal Air Force hospitals. The function was organised by a committee of honorary workers with the Countess of Drogheda as treasurer, the intention being to devote all proceeds to the purchase of equipment and comforts for the hospitals.

The athletic part of the programme was devoted mainly to rowing races, the results being as follows:—The Allied Services Challenge Cup, open to representative crews of the British, the Overseas Dominions, and Allied Services, attracted keen competition. The final was won by New Zealand M.T., with the R.A.F. (Putney) second, in a good race. The Aircraft Challenge Fours were won by R.A.F. (Putney) from R.A.F. 4. The winner of the Aircraft Singles was W. J. Wise, and of the Services Singles, Private Wood (Canada), against whom L. R. Curtis (New Zealand) put up a good fight. A New Zealand pair won the Services Doubles, R.A.F. 4 being second. London Aircraft Company were first in the Aircraft Double Sculling, and Adam, Grimaldi and Co., second.

In addition there were swimming races for women, men, boys, and girls and other aquatic functions, such as walking the greasy pole over water and similar buffoonery.

The R.A.F. Orchestra and the band of the London Motor Transport Section played in turns in the enclosure.

A pageant of model ships, commencing with the ancient English coracle, and including Drake's flagship, the "Victory," the "Discovery," and an impression of an aerial liner of A.D. 1950, added interest to the occasion.

The regatta was undoubtedly one of the most successful functions of its kind which has taken place in aid of a war charity, and reflected great credit upon the ability of those who had organised it.

THE EXHIBITION AT KING'S COLLEGE.

A deputation from the Air Inventions Department, headed by Maj.-Gen. R. M. Ruck, C.B., C.M.G., visited the British Scientific Products Exhibition at King's College on Aug. 26th, and was received by the chairman, Professor R. A. Gregory, and the secretary, Mr. F. S. Spiers.

THE CANADIAN MAIL SERVICE.

A weekly aerial letter mail service between Toronto and Ottawa is to be established, and it will be carried out by the Royal Air Force.

FOR R.A.F. CONVALESCENTS.

The Hydro Rockside, Matlock, has been taken over by the military authorities as a convalescent hospital for officers of the R.A.F.

R.A.F. UNIFORM FOR AIRMEN.

The Air Ministry forwarded the following for publication on Aug. 24th:—

LIGHT BLUE UNIFORM FOR WARRANT OFFICERS, N.C.Os., AND AIRMEN OF THE ROYAL AIR FORCE.

1. It is notified for general information that a light blue uniform has been approved for warrant officers, N.C.Os, and airmen of the Royal Air Force, of which a detailed description is given below.

2. Some months must elapse before the new blue uniform can be generally provided, but khaki uniform of R.A.F. pattern will shortly be available, and will gradually be replaced by blue uniform.

3. DESCRIPTION OF LIGHT BLUE UNIFORM FOR RANK AND FILE.

Cap.

Warrant Officers, 1st Class.—Light blue whipcord crown, band of black braid, black glazed peak and chin strap.

Other Ranks.—Crown of light blue proofed serge, band of black braid, black glazed peak and chin strap.

Cap Badge.

Warrant Officers, 1st Class.—As for officers, but of gilding metal.

Warrant Officers, 2nd Class, and N.C.Os.—Bird encircled by ring, surmounted by crown, in gold embroidery on black velvet.

Other Ranks (1st, 2nd, and 3rd Class Air Mechanics).—As for 2nd Class warrant officers and N.C.Os., but in light blue silk embroidery.

Jacket.

Warrant Officers, 1st and 2nd Class, Flight Serjeants and Serjeants.—Light blue serge of rank-and-file texture; officers' pattern, except for hip pockets, which are slit with flaps; buckle of gilding metal with two prongs; buttons of gilding metal, flat, with device of bird surmounted by crown.

Other Ranks.—As for rank and file in the Army; stand and fall collar; no slits in skirt; military patch breast pockets; belt with two-prong buckle as for warrant officers and serjeans.

NOTE.—Warrant officers, Flt. serjeants, and serjeants will wear silver grey flannel shirts, silver grey flannel collars, and black cotton ties.

Trousers.

All Ranks.—Light blue tartan serge.

Pantaloons.

All Ranks.—Light blue tartan serge without strappings.

Boots.

All Ranks.—Black ankle boots of present pattern.

Great-Coat.

All Ranks.—Details to be notified later.

Distinguishing Badges.

All ranks, other than warrant officers, 1st Class, will wear the device of a bird in light blue silk embroidery on a dark blue ground on both sleeves of jacket and great-coat immediately below the shoulder seam.

Wireless mechanics will wear in addition the "hand and thunderbolt" device immediately under the bird.

Badges of Rank.

Warrant Officers, 1st Class.—Rank will be denoted by the Royal Arms in light silk (blue) embroidery worn on both sleeves of jacket and great-coat below the elbow.

Warrant Officers, 2nd Class.—Crown in light blue worsted embroidery on both sleeves below elbow.

Flight Serjeants.—Three chevrons and crown of light blue worsted embroidery.

Corporals and Serjeants.—Two and three chevrons respectively of light blue worsted embroidery.

1st Class Mechanics.—Two-bladed propeller of light blue worsted embroidery worn immediately under the bird.

SPORTS AT THE R.A.E.

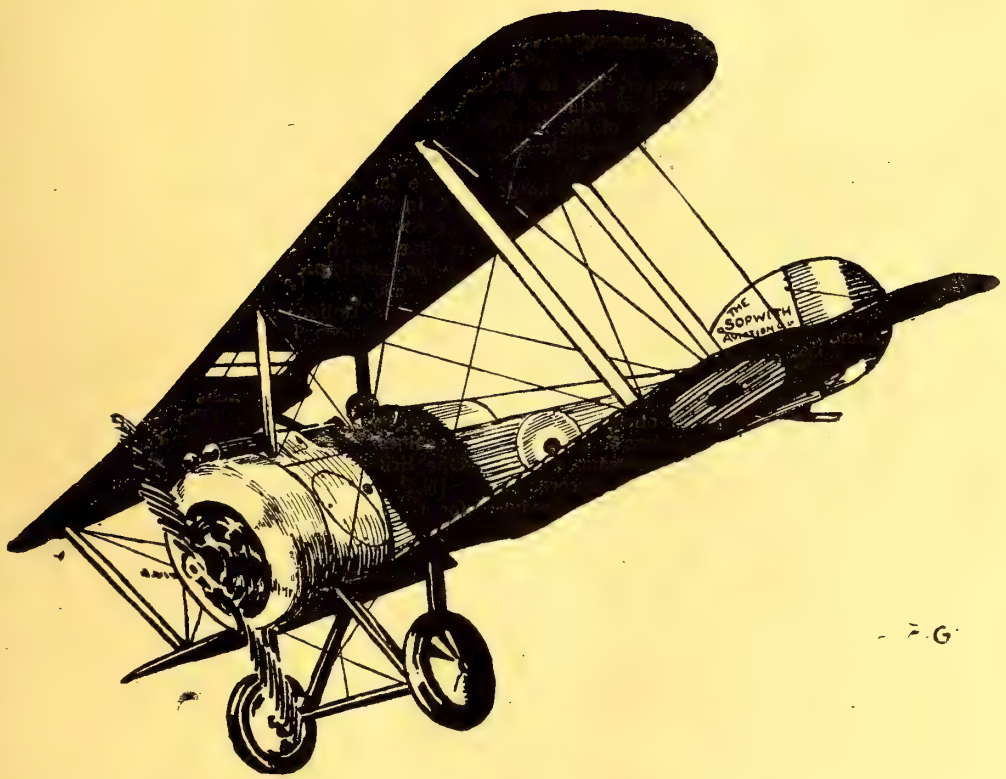
The annual sports of the Royal Aircraft Establishment were held at South Farnborough on Saturday, Aug. 17th. The events displayed the usual variety common to such functions, and some good times were made.

The proceeds of the sports are to be devoted to the Royal Aircraft Establishment Athletic Club, which enjoys the patronage of Lord Weir of Eastwood, Sir Arthur Duckham, K.C.B., and Sir Henry Fowler, K.B.E. The President of the Club is Mr. W. Sydney Smith, and the Chairman, Major G. Turner.

THE "RAID" ON VIENNA.

Major D'Annunzio's attempt to open the blinded eyes of the Austrian capital was accomplished on S.V.As., seven of which were single-seaters and the eighth was fitted with a place for the C.O. himself. It is interesting to remember that this trip was planned to take place months back on a Caproni especially built, but this arrangement seemed hardly the best for the purpose. The great speed of the S.V.A. and its relative invisibility at the high ceiling which it affects caused the choice to fall upon the newer machine. The squadron, except the C.O's. machine, was prepared to show fight, but was not obliged to do so. Capt. Palli, who had had the Innsbrück raid and the long Dalmatian trip as training, piloted D'Annunzio.—T. S. H.

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THE WAR IN THE AIR.

The following unofficial weekly résumé of the war in the air was communicated to The Aeroplane on Aug. 26th :—

British air fighting upon the Western Front during the past week affords a striking indication of the difficulties which are now confronting Germany in the air, and which must increase in the near future as the immense and growing air-power of the Allies makes itself felt.

In the battle area itself, British aviators have had a busy and most successful week. Considerable forces have been encountered, drawn chiefly from other and quieter sectors of the lines. Possibly owing to the recent heavy German air losses over the Somme battlefield, the enemy scouts in this region have been compelled to operate in larger formations and at a much greater height than was the case earlier in the battle.

Notwithstanding this, British aviators have continued to take a heavy toll of enemy machines at relatively small cost to themselves, while carrying out a greatly increased amount of photographic reconnaissance and counter-battery work upon the line of the advance.

Enemy's Severe Losses in the West.

Some particularly heavy air-fighting has taken place upon this front, notably between Albert and the Amiens-Roye Road, no fewer than 62 enemy machines being destroyed and 21 driven down out of control during the week. Twenty-six British machines were reported missing. Thus for every British machine missing, more than three German machines are known to have been accounted for.

The chief significance of these figures, however, lies in the fact that, while the enemy's concentration has been achieved at the cost of an enforced inactivity on other sectors of the front, British aviators have not abated in the least their energetic and destructive raids into every part of the enemy's territory.

Apart from the very large number of raids made by our battle squadrons against vital enemy positions far behind the lines, during which over 120 tons of bombs have been dropped, the attacks upon Belgium and the Rhine Provinces have been pressed home with the utmost vigour.

Germany Unable to Protect Her Air Frontiers.

It must be both puzzling and depressing to the German people (who have been and still are being officially fed upon the legend of Germany's superiority in the air) to realise that, while the much-vaunted air raids upon London have ceased under pressure of events in the battle-front, the British aerial offensive against Germany, on the contrary, grows daily in deadliness and power.

There is a certain inevitability about the incessant British raids into Belgium and the Rhine Provinces which accords ill with the fiction of a victorious Germany, and which is undoubtedly causing great misgiving among the German public For it can now hardly be disguised that despite her utmost defensive efforts, Germany is no longer able to protect adequately her immensely long air frontier against the attacks of the Allies.

British Air Successes in Belgium.

This fact is strikingly illustrated, apart from the formidable work of the Independent Force over German cities, by the successful series of raids carried out against the German docks and naval bases on the coast of Belgium. During the week British aviators have repeatedly attacked the following military objectives :—

Bruges (docks, sheds, and buildings),
Ostend (docks),
Zeebrugge (The Mole, Solway works, etc.),
Aertryke,
Meetkerke,
Middelkerke,
Leffinghe,
Paaschendaale Canal,
Zeebrugge-Bruges Canal,
Westende Batteries,
Stahille Dump, etc., etc.

Nearly 30 tons of bombs have been dropped with marked effect during these operations. In the attacks on Zeebrugge direct hits were secured upon the Mole, and a fire started. Explosions were also observed at Bruges Docks, while photographs taken at Ostend show extensive damage to the quays. In the course of severe fighting over these objectives 12 enemy machines have been destroyed, and 10 driven down out of control. Six of our machines are reported missing.

Raids into Germany.

During the same period the R.A.F. Independent Force has made a large number of destructive raids into German territory. Among the military objectives attacked are :—

Frankfort (station, second raid)	once
Cologne (station and barracks)	once
Treves (station)	once
Mannheim (factories, station, and docks)	twice
Coblenz (railway sidings)	once
Boulay (aerodrome)	six times
Buhl (aerodrome)	three times
Volklingen (blast furnaces)	once
Sarreburg (station and siding)	twice
Burbach (works)	once
Dillingen (factory)	once
Hagenau (aerodrome)	once

The extent of German perturbation concerning the increasing development of these raids may be judged by the fact that during the Mannheim raid extraordinary fierce fighting took place, both on the outward and return journeys between the British squadrons and large forces of the enemy, during which three enemy machines were destroyed. In all seven British machines failed to return.

Effects of Raids on the Enemy.

The effects upon German morale of this vigorous and aggressive policy by British aviators, in France, in Belgium, and over Germany, are beginning to appear in many curious ways. For example, a captured German Order to town commandants in France states that

"all vehicles in yards are to stand close against the walls, and to be concealed from the view of the aviators. Field kitchens must be set up under sheds and gateways. When visibility is good, roll calls, concerts, and ration issues are not to be held in the open air."

Another captured Order gives the following instructions :—

"Within 10 miles from the front only small groups of eight or ten men to proceed together.

"All troops to get under cover, or turn off the road, when aircraft reported.

"Motor lorries not to cross a line 10 miles from front during the day. At night, no lights, not even pocket lamps allowed."

Some other documents found are of an even more exceptional character, but space considerations forbid their production here. In single instances such restrictions may appear of small moment, but in their collective effect upon the whole vast organisation of the enemy, they represent a dislocation of the normal military routine which is not only wearisome and depressing for his troops, but imposes serious and grave delays in the execution of his plans.

On the Italian, Balkan, and Palestine fronts British aviators have also been busy throughout the week. No sensational achievements are reported from these fronts, but many thousands of rounds of ammunition have been used over ground targets, many valuable photographs were taken, and a very considerable weight of bombs have been effectively dropped. Five enemy machines were destroyed and eight driven down out of control. One British machine is reported missing.

[N.B. The Editor of The Aeroplane disclaims responsibility for the grammar and spelling of the foregoing article.]

AMERICAN AIRCRAFT PRODUCTION.

A message from Washington, dated Aug. 22nd, says that :—The Senate Committee appointed to investigate the question of aircraft production has just issued its report, in which it declares that the first Congressional appropriation for aeroplanes was practically wasted.

The report comments in scathing terms on the failure to provide any equipment for flying men, and also charges that undue favouritism was shown to certain builders of motors. It goes on to express satisfaction at the marked improvement now noticeable in carrying out the aircraft programme, and urges the setting up of an aviation department with a representative in the Cabinet.

A GROSS EXAGGERATION.

The following extract from " Le Matin " of Friday, Aug. 9th, 1918, will be of interest to many :—

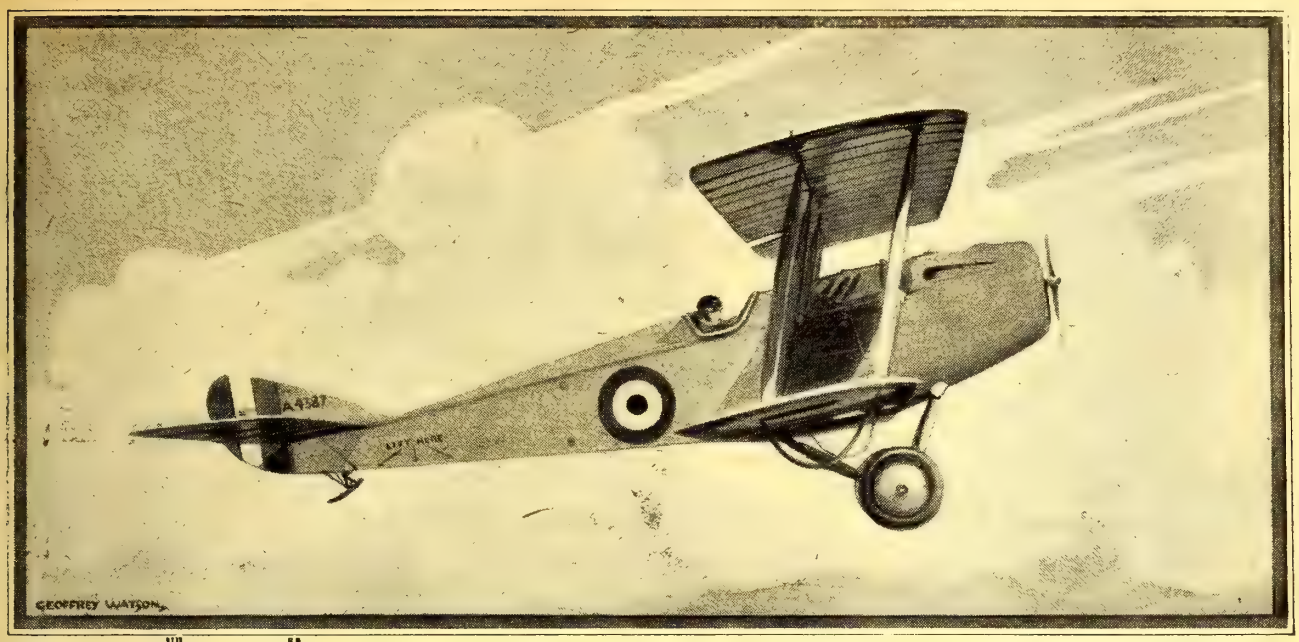
"L'Ingénieur-aviateur Handley Page s'est tué."

" L'aviation britannique subit un coup cruel du sort dans la perte de l'ingénieur Handley Page, qui s'est tué en Angleterre en essayant un de ses appareils.

" Handley Page a été le père de l'aviation britannique de bombardement. C'est en copiant ses avions capturés que les Allemands avaient construit tout le première série des Gothas.

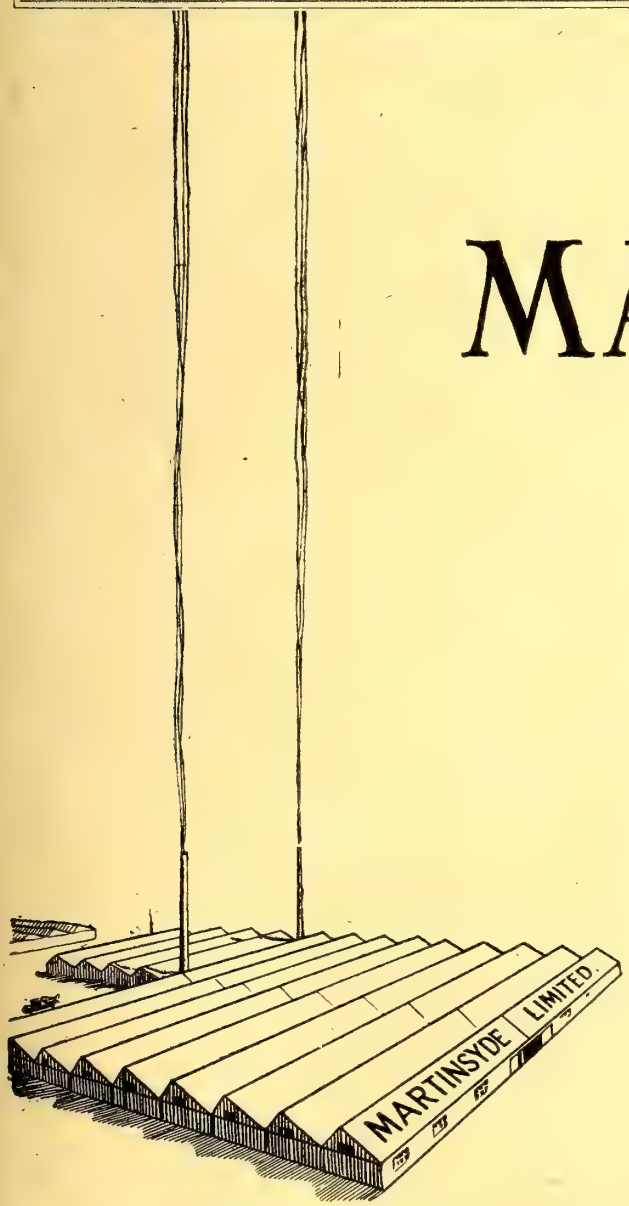
" Le type Handley Page sert également aux services postaux en Angleterre et aux relations aériennes entre la France et les îles Britanniques."

[Though one knows British aviation fairly well one does not know an aviator named Handley Page, and so far as the aeroplane designer of that name is concerned one is happy to state that this report is a gross exaggeration of any slight ailment from which he may be suffering. However, Mr. Handley Page is fortunate in reading his own obituary and in learning that he is held in such high esteem by our gallant Allies. At the same time it will be pleasant news to him to learn that his type of aeroplane is used for postal services in England, for much though many of us desire it, we have not yet been told that the Air Ministry has overcome its seemingly invincible objection to doing anything to advance the prospects of the British Aircraft Industry in civilian flying after the war.—Ed.]





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GEOFFREY WATSON

FROM THE "LONDON GAZETTE."

AIR MINISTRY, Aug. 20th.

R.A.F.—The following temp. appts. are made :—Group Comdr.—Col. (temp. Brig.-Gen.) F. R. Scarlett, D.S.O., and to retain his temp. rank whilst so empld., Aug 12th.

Colonel (Equip.).—Maj. (temp. Lt.-Col.) M. Spicer, and to be temp. Col. whilst so empld., vice Lt.-Col. (temp. Col.) R. H. Austin-Sparks (killed), Aug. 6th.

Staff Officer, 1st Cl.—Capt (temp. Maj.) D. Harries, and to be temp. Lt.-Col. whilst so empld , vice Capt. (temp. Lt.-Col.) F. W. Lucas, M.C., June 26th.

Staff Officers, 2nd Cl.—And to be temp. Majs whilst so empld. :—Capt. G. B McClure, June 1st; Lt. (temp. Capt.) H. O'N. de Segrave, June 22nd; Lt. R. A. Pennington, July 4th.

FLYING BRANCH.—Capts. to be temp. Majs. whilst empld. as Majs. (A.) :—R. B Maycock, Aug. 1st; L. G. S. Payne, Aug. 5th; R. D. Oxland, Aug. 8th.

Lts. (temp. Capts) to be temp. Majs. whilst empld. as Majs. (A.) :—F. H. M. Maynard, June 17th; A. W. Bird, D.S.O., T C. Thomson, Aug. 1st; N. Brearley, D.S.O., M.C., Aug. 2nd; A. B. Shearer, Aug. 7th; C J. Truran, Aug. 12th; Capt. (temp. Maj.) R. M. S. Veal to be Capt. (A.) from (T.), and to be Hon. Maj., July 25th

Lts. to be temp. Capts. whilst empld. as Capts. (A.) :—R. B. Sutherland, July 23rd; H. A. V. Hill, P. W. Spurr, Aug. 3rd; J. McBain, K. C. Mills, Aug. 6th; G. Bryers, Aug. 7th; D. M. Deighton, G L. Graham, W C. Hilborn, S. H. McCrudden, N. P. Playford, R N. Smith, H. W. Taylor, R. Turner (Hon. Capt.) D. Watson, Aug. 9th; T. G. Jefferies, F Lord, A. MacGregor, Aug. 10th; S. E. Toomer, Aug. 11th; L. R. Evershed, I. W. Leiper, Aug. 16th.

The following Flt. Cadets are granted temp. commns as Sec. Lts. (A.) :—J. R Baisley, R. W. Ball, G. A. Beatty, C. R. Benedict, J. W. F. Clake, G. T. Cunningham, C. T. Dempsey, E. A. Dietrich, D. J. Dillabough, H. R. French, J. C. Gow, J. Gribbin, H. A. Halliday, W. E. Hampel, R C. Hargrave, S. W. Holt, W. A. Jackson, E. R. Jones, J. J. Kane, S. Kenna, C. Lindsay, C. A. Lovell, U. Macfarlane, H Mackay, A. P. McAvoy, G. C. McCullum, A. E. W. Middleton, L. J. Mousseau, H. F. Nase, G. H. Palmer, W. J. Parker, H. H. Peterson, J. A. Peterson, F E. Place, L. W Prime, L. H. Rice, R. B. Robinson, T. A. Roberts, G. M. Ross, J. C. Sahloff, M. J. Swanston, A. B. Taylor, A. H. Thompson, T. A. Valles, J. W. Vaughan, H. B. Ward, G E. Warren, S. Whittaker, D O. V. Wigle, F. G. Wright, July 18th.

Lt. A. Sattin, to be Lt. (A. and S.), from Obsr. Officer, July 16th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob) are confirmed in their rank as Sec Lts. (A. and S.) :—N. E. Lashbrook, J M. Letson, H. T. Kempton, P. W. Mackintosh, H. St. J. Smith, C. B. Gibson, May 27th; C. H. Moss, June 21st, L A Williamson, J. Nicolson, June 22nd; W. N. Owen, July 6th; J. J. Luckley, July 8th; A. V. Green, July 9th, J. C Dunbar, A. P. Murray, July 10th; J. A. Matthews, July 11th; O D. Alward, E. A. Copp, July 14th; S. A. Thomson, A. S. McPhail, July 15th; C. V. Bradley, July 16th; J. E. Sewell, R. T. Stewart, H A Nester, C. E. Irving, W. T. Brewster, P. A Templeton, E. H. Maw, July 17th.

Sec Lt. J. T. Menzies (R.F.C., Spec. Res., on prob.) is confirmed in his rank as temp. Sec. Lt. (A. and S.), June 26th.

The following Flt. Officers are granted temp. commns as Sec Lts. (A. and S.) :—C. V. Lock, May 26th; G. W. Smart, G. Thomson, June 14th; A. J. Attwood, June 19th; W. G. Cooke, June 24th; W. L. Miller, June 27th; J. H. Judd, July 9th; W. B. Richardson, July 18th; A. W. Emery, July 27th; T Phillips, July 28th; T. Treise, July 20th; J. F. Christopherson, W. J. Bowler, July 31st; D. E. Hall, Aug. 2nd; C. G. Milne, Aug. 4th; J. D. Lightbody, Aug. 7th.

The following prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (A. and S.) :—A. E. Betts, G. Fisher, S R Pragnell, July 24th.

The following are granted temp. commns. as Sec. Lts. (A. and S.) :—W. D Brownlee (Sec Lt., High. L.I., Spec. Res.), July 8th; H. Tuft (temp. Sec. Lt., R. War. R.), July 14th; B. P. Springett (temp. Lt., Trg. Res.), and to be Hon. Lt., July 16th; S. G. Neal, Aug. 19th.

W. A. Moore (Capt., Rif. Brig., Spec. Res.) is granted a temp. commn. as Sec. Lt. (A. and S.), and to be Hon. Capt., May 30th. (Substituted for notification in "Gazette," Aug. 2nd).

R. G Fordham (late Sec. Lt., R.F.C., S.R.) is granted a temp. commn. as Sec. Lt. (Dir.), Aug. 19th.

The following are granted temp. commns as Sec. Lts. (K.B) :—A. R. R. Woodiwiss (Sec. Lt , R. Irish R.), July 20th; J. W Smith (Sec. Lt., R.F.A , Spec. Res), July 24th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (Obsr. Officers) :—J. A. Bramley, June 24th; M. P. Dalrymple, F W. Chadwick, July 14th; P. A. Clayson, O Gibb, J. Tremain, July 15th; E. R. Ludlow, J W. Mettam, W. E. Hedley, July 16th; A. H. Hollis, July 19th; H. Walker, W. P. Purvis, July 27th.

Sec. Lt. G. L. Shaw to be Hon. Lt. (Obsr. Officer), from (T.), July 12th.

Lt. L. W. King to be Sec. Lt. (Obsr. Officer), and to be Hon. Lt., from (A. and S), July 15th.

The following P.O.Os. (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—E. Meredith, May 6th; W. F. Jones, W. R. Hudson, May 25th; E. L. Comba, July 20th; I. D McIntyre, July 27th.

The following are granted temp. comms. as Sec. Lts. (Obsr. Officers) :—T. V. Preedy. (temp. Sec. Lt., Bord. R.), April 1st; A. G. MacGowan (temp. Sec. Lt., Gen. List, New Armies), K. O. Bracken (Sec. Lt., R.F.A., Spec. Res.), July 6th; P. Fish (Sec. Lt., Notts and Derby R., T.F.), R Lowe (temp. Sec. Lt., attd. Notts and Derby R.), July 12th; G W Parlee (Lt., Can. A.M.C.), and to be Hon. Lt., July 14th; W. M. F. Bayliss (Lt., Lancers), and to be Hon. Lt., R. J. Mesney (Lt., R. War R., S.R.), and to be Hon. Lt., J. Scott (Lt., High. L.I.), [illegible] Lt, S. Tweedie (temp. Sec. Lt., Lab. C.), July 15th; E. J Riley (Lt., Can. A.M.C.), and to be Hon. Lt., J. H. Preston (Sec. Lt., Sea. Highrs.) A. C. Hyde (Sec. Lt. Essex R., T.F.), A. F. Pope (temp. Sec. Lt., attd. R. W Kent R.), B. R. Garrod (Lt., N. Lan. R.), and to be Hon. Lt., C. A. Winch (Sec. Lt., Rif. Brig., Spec. Res.), E. C. Delamain, M.C (temp. Sec. Lt., R.E.), July 16th; C. Partington (temp. Lt., R. War. R.) and to be Hon. Lt., W. E. Baldwin (Sec. Lt., Manch. R., T.F.), A. Petersen (Sec. Lt., E. York R., Spec. Res.), July 22nd; H. G. W. Parkinson (Lt., A.S.C., T.F.), and to be Hon. Lt., July 25th; C. V. Kelway (Lt., R.G.A., T F.), and to be Hon. Lt., July 27th; A. C. Roberts (temp. Sec. Lt., attd. Middx. R.), C. W. Clutson (Sec Lt., Glouc. R.), S. Lane (Sec. Lt., Linc. R., T.F.), K. I. Turnbull (Sec. Lt., Notts and Derby R., T.F.), Aug. 1st; F. Warham (Sec. Lt., N. Staff. R., Spec. Res.), Aug 6th; E. E. Taylor (temp Sec. Lt., A. Cyclist Corps), H. M. Kettener (temp. Sec Lt., attd. E. York. R.), Aug. 12th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—J. G. Hall, June 15th; C. H Berry, D. Etchells, F. Gandy, H. R. Gomersall, J. R. Devlin, A. C. Fenn, J. Findley, A. R. Cotton, D. H. W. Cronley, L. B. Simmons, D. J. Avery, R. M. Alston, Aug. 9th; S. Brooks-Perry, J. B. Jamieson, Aug. 12th; H. C. Richards, L. W S. Smith, L. H Day, G. N. Pask, Aug. 16th; O. Playne, E. C. Dearth, A. R. Bell, K. V. Hill, E. W. Renny, R. P. Coton, C. E. Whyte, E. B. Webster, G. Thomson, H. Cahill, J. Bolton, Aug. 17th; D. E. Lowrie, J E. Stalley, F. H. Langmaid, D. A. W. Weeks, N. C Shergold, W. A R. Speight, Aug. 18th; H. T. Barrett, G. H. Cavill, J. W Elder, W. J. Hignett, H C. Jepson, C. R. Jenkins, H. E. Linsley, J. MacLusky, J. I. Boothroyd, V. A. Shipman, V. J. Fontannaz, O W. Clarke, G. A. Shipton, G. Scott, E. G. Stevens, A. L. Symes, Aug. 19th.,

Sec. Lt. (Hon. Lt.) G. W. McA. Paterson to be Lt., May 21st

Capt. W. B Hogg (Paymaster, R.N.R.) relinquishes his commn. on ceasing to be empld., Aug. 10th.

Sec. Lt. M. E. Dezee resigns his commn., Aug. 21st.

Lt. C. W. Bell relinquishes his commn, having been found permanently unfit for further instruction as Pilot or Obsr., Aug. 21st.

The following Sec Lts. relinquish their commns , having been found permanently unfit for further instruction as Pilots or Obsrs. :—J. D. Hardie, C. B. Hudson, J. M Gibson, Aug. 21st.

The surname of Sec. Lt. G. W. McA. Paterson is as now stated and not as in "Gazette," May 21st.

The surname of Sec. Lt. C. G. Slaker is as now described, and not as stated in "Gazette," Aug. 9th.

The initials of Temp. Capt. G. L. Hobbs are as now described, and not as stated in "Gazette," July 23rd.

The notification in "Gazette," July 12th, concerning Sec. Lt. C. H. Ashworth is cancelled.

The notification in "Gazette," May 1st, concerning Sec. Lt. S. J Dodson is cancelled.

The notifications in "Gazette," July 30th, with reference to the following officers, A. and S. (late Gen. List), are cancelled :—Sec. Lt. F. W Long, Sec Lt. S. L. Bennett.

The notification in "Gazette," July 26th, with reference to Sec Lt. H. H. Newman (A and S.) is cancelled.

The notification in "Gazette," Aug. 6th, with reference to Sec Lt. [illegible] D [illegible] (R.B) is cancelled.

The notification in "Gazette," June 4th, with reference to Flt. Cadet W. L. Woodhouse is cancelled.

ADMINISTRATIVE BRANCH.—Lt. (temp. Capt.) W. H. Holroyd to be temp. Maj. while empld. as Maj., July 1st.

G. R. Hill (Capt., R.D.C.) is granted a temp. commn. as Capt., July 31st.

To be temp. Capts. while empld. as Capts :—Sec. Lt. L. J. Grant, April 1st (substituted for notification in "Gazette," Aug. 6th; Lt. T H. Nesbitt, April 1st; Sec. Lt. F. Waldron, April 20th; Lt. (Hon. Capt.) N. G. Hodson from (S.), July 8th; S. W. Hodgkinson is granted a temp. commn. as Sec. Lt., and to be temp. Capt. while specially empld., [illegible] 10th

The following are granted temp. comms. as Sec. Lts , and to be temp. Lts. while specially empld. :—A. H. Dawson, T. Honnor, Aug. 16th.

The following are granted temp. commns. as Lts. :—J. F Fielding (Lt., Suff. R.), Aug. 3rd; R Elphick (temp. Lt. Dub Fus.), Aug 6th

Lts. (A) to be Lts :—S. F. Culver, June 27th; W Woodward, Aug. 9th; R. L. Sweeny, Aug. 13th.

Sec Lts. to be temp. Lts. while empld. as Lts. :—R. E. Roberts, July 18th; (Hon. Lt.) F. W. Day, July 24th; J. B. Martin, H. A. Thomas, Aug. 1st.

The following are granted temp. commns. as Sec. Lts. :—E G. Stott, May 7th; F Dunlop, Aug. 15th; C. E. Barwell, P. C. Beardwood, E. J. Cook, C. W. Daniel, H. H. Fell, W. H. Heard, V. G. Jeffreys, W. E. Middleton, H. Owen, T. H. Rudd, H. L. Smith, V. R. F. Whitehead, R. A. Wright, W. Giddings, A. J. Knight, C. W Richardson, G. Hutcheson (late Sub-Lt , R.N.R.), and to be Hon. Lt., F. J. Tussard (Hon. Lt., Ret. List), and to be Hon. Lt., Aug 16th; H. E. Edwards, J. G. Collins, S. J. Laidler, L K. Rayner, J. S Shipway (Hon Sec. Lt., Ret. List, T.F.), C. A Wilkin (Ex. F/Sub-Lt , R.N.A.S), Aug 10th,

H. H. Newman (late Gen. List, R.F.C.), on prob.) is confirmed in his rank as Sec Lt., May 29th.

The notification in "Gazette," April 26th, regarding Sec. Lt. S. W. Turner is cancelled.

The notification in "Gazette," Aug. 2nd, concerning Lt. (temp. Maj.) S. T. Grant is cancelled.

TECHNICAL BRANCH.—The following are granted temp. commns. as Capts.:—M. Deacon (temp. Capt., R.E.), April 1st; L. Y. Stott (Lt., R.N.V.R.), July 26th; Capt. A. FitzR. P. H. Somerset-Leeke to be Capt. from (Ad.), April 1st.

To be temp. Capts. while empld. as Capts.:—Lt. J. W. Tattersell, July 1st; Sec. Lt. (Hon. Lt.) A. E. Verpilleux, Aug. 19th; Lt. (Hon. Capt.) V. F. Davies to be Lt. from (A.), and to be Hon. Capt., April 1st.

Sec. Lts. to be temp. Lts. while empld. as Lts.:—(Hon. Lt.) L. Butterfield, J. G. Daniel, H. de S. Hodson, W. Marshall, J. Millar-Whitfield, F. C. Topham, E. C. Thompson, Aug. 1st. Lt. G. P. Jones relinquishes his commn. on ceasing to be empld., Aug. 7th.

MEDICAL BRANCH.—The following are granted temp. commns. as Capts.:—H. J. Levieseur (late temp. Surgn., R.N.), Aug. 16th; C. L. Birmingham (late temp. Lt., R.A.M.C.), Aug. 19th.

The following are granted temp. commns. as Lts.:—C. Meadows, June 1st; T. Montgomery, V. A. T. Spong, Aug. 19th.

MEMORANDA.—Lt.-Col. P. B. Joubert de la Ferté, D.S.O., to be temp. Col. while specially empld., Aug. 21st.

The date of appt. of the following to be temp. Brig.-Gens. is May 24th, and not as in "Gazettes" of July 5th and 26th:—Maj. (temp. Brig.-Gen.) R. K. Bagnall-Wild, Maj. (temp. Brig.-Gen.) J. G. Weir, C.M.G.

WAR OFFICE, Aug. 21st

REGULAR FORCES.—ESTABLISHMENTS.—R.F.C.—MIL. WING.—Gen List.—To be temp. Sec. Lts.:—2nd Cl. Air Mech. C. Sweetman, from R.F.C., Feb. 16th; 3rd Cl. Air Mech. M. Pennycock, from R.F.C., Feb. 17th; Serjt. C. F. Dakin, from R.F.C., Feb. 18th; Cpl. G. A. Richardson, from R.F.C., March 10th.

WAR OFFICE, Aug. 23rd.

MEMORANDUM.—The undermentioned to be temp. Capt.:—Lt. G. W. Cox, R. Highrs., T.F., whilst commanding a squadron of an Officers' Technical Training Wing, R.F.C., Feb. 15th, 1918.

* * *

The Secretary of State for the Colonies has received from the Governor-General and Commander-in-Chief, Union of South Africa, the following list of officers and other ranks whose names have been brought to notice by Gen. the Rt. Hon. Louis Botha for distinguished service in the field and in connection with the campaign in German South-West Africa, 1914-15:—

ROYAL AIR FORCE.

Batten, Lt. (temp. Capt.) H. V.
Creed, Lt. (temp. Capt.) G. S., Permt. Force (Staff).
Hinshelwood, Sub-Lt. T., R.N.A.S.
Van Der Spuy, Lt. (temp. Capt.) K. R., M.C., Permt. Force (Staff).
Wallace, Capt. (temp. Maj.) G. P., D.S.O., Permt. Force (Staff).

AIR MINISTRY, Aug. 23rd.

R.A.F.—The following temp. appt. is made at the Air Ministry:—

Staff Officer, 1st Cl.—Maj. (temp. Lt.-Col.) I. A. E. Edwards, and to retain his temp. rank whilst so empld., vice Maj. (temp. Lt.-Col.) T. W. C. Carthew, D.S.O., June 25th.

Staff Officer, 3rd Cl.—The initials of Capt. G. C. Braithwaite are as now described, and not as in "Gazette," April 2nd

The following temp. appts. are made:—

Staff Officers, 2nd Cl.—And to be temp. Majs. while so empld. if not already holding that rank:—Lt. (temp. Capt.) C. D. Morrison, July 1st; Capt. (temp. Maj.) W. A. S. Rough, July 5th.

Staff Officer, 3rd Cl.—Sec. Lt. A. A. Longworth, and to be temp. Capt. while so empld., June 7th. The name of Lt. (temp. Capt.) J. McG. Glen is as now described, and not as in "Gazette," May 10th.

The date of appt. of Lt. (temp. Capt.) C. G. Turpin is July 3rd, and not as stated in "Gazette," Aug. 2nd.

FLYING BRANCH.—Capt. E. L. Johnston to be temp. Maj. whilst empld as Maj. (Dir.), Aug. 2nd.

Lt. (temp. Capt.) A. Long retains his temp. rank whilst empld. as Capt. (A.) from (T.), July 23rd.

Lts. to be temp. Capts. whilst empld. as Capts. (A.):—C. W. B. Martin, July 26th; R. C. Jenkins, M.C., Aug. 3rd; (Hon. Capt.) J. L. Middleton, Aug. 9th; O. C. Holleran, Aug. 11th; C. J. Venter, Aug. 17th.

Lts. (Hon. Capts.) to be temp. Capts. whilst empld. as Capts. (S.):—J. M. Turner, July 18th; J. A. Sadler, Aug. 16th.

The following cadets are granted temp. commns. as Sec. Lts. (A.):—W. Anderson, R. W. Baker, N. Barrie, C. R. Baxter, C. E. Beckman, J. B. Bennett, H. Board, W. Bradley, J. L. Campbell, F. D. Chisholm, J. H. Cunningham, J. L. Dwyer, C. H. Edgecombe, G. J. Ellsmere, T. N. Enright, S. M. Farrell, A. M. Flanagan, O. R. Flynn, L. A. Fonesca, J. A. Gagnom, A. B. Gardiner, M. Gardiner, H. A. Gilber, S. J. Glavin, S. N. Hart, D. H. Hartness, W. H. Henrion, T. Herdman, C. L. Hicks, W. C. Howard, F. J. Howorth, E. King, C. E. Krouse, J. E. Le Court, P. McHenry, J. E. McLellan, C. R. McNeill, A. B. Mair, H. S. Moore, H. W. Orvis, F. A. Parker, C. W. Pethick, F. G. Reid, E. F. Reynolds, J. A. Ritchie, W. C. Ritchie, E. F. Rogers, W. E. Rose, N. W. Russell, N. Sagan, W. D. Saunders, P. G. Smith, P. S. Smith, J. G. Thomson, I. Williams, H. H. Williamson, D. E. Wood, A. M. Berry, J. A. Norris, July 25th.

The following Lts. (Obsr. Officers) to be Lts. (A. and S.):—E. G. Hilton, July 4th; K. Wallace, July 9th; A. H. Thompson, July 10th; D. d'H. Humphreys, July 24th; Sec. Lt. G. A. W. Garland to be Sec. Lt. (A. and S.) from (T.), July 24th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A. and S.):—H. C. Bryant, April 8th; F. H. Fisher, T. M. Phillips, May 17th; W. F. Carson, May 19th; E. F. Newman, June 3rd; R. F. Glazebrook, June 5th; H. C. Craddock, J. K. McGregor, June 15th; T. K. Spencer, June 16th; G. Lindsay, H. W. Spalding, June 17th; J. A. Critchley, G. J. Duncan, June 18th; O. V. Lee, I. I. Elliott, June 19th; A. A. Mound, June 20th; S. G. Hollingsworth, June 23rd; G. H. Clayton, A. Hill, June 24th; O. O. Mousley, J. D. Dunbar, J. W. Richards, June 25th; A. T. J. Anderson, N. Purtell, F. C. Brackenborough, S. D. Sayer, June 26th; L. A. Green, G. R. S. Browne, June 28th; G. F. Anderson, C. N. Boyd, H. J. D. Rudolf, C. A. Koch, J. B. O'Neil, B. Tamiriantz, June 29th; S. Graves, June 30th; H. C. W. Ross, L. E. Tatton, July 2nd; J. H. Gardner, July 5th; L. W. Greenwood, July 6th; W. A. Linnell, July 13th; A. H. Betteridge, July 20th; H. E. Dobson, A. J. Cleare, H. G. Fraser, July 23rd; W. Lloyd-Williams, July 25th; E. Hazell, July 26th; R. A. Whyte, July 28th.

Sec. Lt. F. E. Spain (late R.F.C., Spec. Res., on prob.) is confirmed in his rank as temp. Sec. Lt. (A. and S.), June 27th.

The following are granted temp. commns. as Sec. Lts. (A. and S.):—W. W. Halsall (Lt., E. Kent R., T.F.), and to be Hon. Lt., April 27th; N. W. G. Wilkinson (Lt., Manch. R., T.F.), and to be Hon. Lt.; W. A. Moore (Lt., Rif. Brig., Spec. Res.), and to be Hon. Lt., May 30th; F. J. Kisbey-Green (late Lt., S. African Inf.), and to be Hon. Lt., June 4th; J. C. S. Master (temp. Sec. Lt., Brit. W.I.R.); B. B. Davis (temp. Lt., R.I. Rif.), and to be Hon. Lt., June 15th; T. L. T. Sykes (Lt., R.I. Fus., Spec. Res.), and to be Hon. Lt., June 16th; W. Coke-Gee (Sec. Lt., I.A.R.O.), June 17th; P. A. Katte (temp. Sec. Lt., Worc. R.), June 18th; D. N. Read (Sec. Lt., High. L.I., Spec. Res.); A. J. Smee (Lt., Wilts R., Spec Res.), and to be Hon. Lt.; O. B. Thompson (temp. Lt., Conn. Rang.), and to be Hon. Lt., June 20th; W. R. Barnett (Sec. Lt., Shrops. L.I.), June 22nd; A. T. Holman (temp. Lt., R.F.A.), and to be Hon. Lt., June 23rd; H. Thickett (Lt., R. Lanc. R., Spec. Res.), and to be Hon. Lt., June 25th; L. J. Newman (Lt., B.S.A.P.), and to be Hon. Lt., C. D. Spiers (temp. Sec. Lt., attd. Glouc. R.), June 26th; N. MacLeod, M.C., D.C.M. (Lt., Sea. Highrs.), and to be Hon. Lt.; M. R. Stack (temp. Lt., Conn. Rang.), and to be Hon. Lt.; P. V. C. Low (Lt., R. Highrs.), and to be Hon. Lt.; A. M. Pawsey (Lt., N. Lan. R., T.F.), and to be Hon. Lt., June 27th; S. Wallingford (temp. Sec. Lt., Rif. Brig.); J. D. McEwen (Lt., R.F.A., Spec. Res.), and to be Hon. Lt.; J. S. Bower-Binns (Lt., E. Ont. R., C.E.F.), and to be Hon. Lt.; H. A. Heritage (Sec. Lt., Lond. R., T.F.), June 28th; C. H. Connah (temp. Sec. Lt., Notts and Derby R.); A. F. B. Broadhurst (Capt., High. L.I., Spec. Res.), and to be Hon. Capt.; L. Darvall, M.C. (Lt., York R.), and to be Hon. Lt.; A. Seale (Lt., Ches. R., T.F.), and to be Hon. Lt., June 29th; W. W. Mackinlay (Sec. Lt., R.G.A., Spec. Res.); A. E. Tweed (Lt., Devon R., Spec. Res.), and to be Hon. Lt.; P. H. Turner, M.C. (Lt., Essex R., T.F.), and to be Hon. Lt.; A. C. Orchin (temp. Lt., Res. R. of Cav., attd. Hrs.), and to be Hon. Lt.; T. T. Morton (Lt., Yorks Hrs., T.F., posted to W. Yorks R.), and to be Hon. Lt.; L. B. Felton temp. Lt., New Armies, Gen. List), and to be Hon. Lt.; J. F. Forster (Lt., Bord. R., T.F.), and to be Hon. Lt., June 30th; C. C. Reynolds, M.M. (Sec. Lt., Wilts R., Spec. Res.); V. C. Hemsley (temp. Sec. Lt., attd. Dorset R.), July 2nd; R. W. Jones (temp. Sec. Lt., attd. R.W. Fus.), July 4th; B. Mansfield (Sec. Lt., Sco. Rif., Spec. Res.); D. L. Blackford (Capt., New Armies, Gen. List), and to be Hon. Capt., July 5th; F. W. Van Blommestein (Sec. Lt., Lond. R., T.F.), July 9th; J. Houghton (Lt., R. War. R., T.F.), and to be Hon. Lt., July 10th; A. E. Turton (temp. Sec. Lt., Middx. R.), July 13th; H. J. Bath (Sec. Lt., York R., T.F.), July 14th; S. R. Ellis (temp. Sec. Lt., attd. Middx. R.); J. A. Lewis (temp. Sec. Lt., attd. Middx. R.); A. J. Howell (Sec. Lt., Glamorgan Yeo., T.F.), July 15th; D. Leed (temp. Sec. Lt., Hamps. R.), July 16th; W. W. E. Clarke (temp. Sec. Lt., attd. Lanc. Fus.), July 17th; H. E. Y. Carroll (Sec. Lt., K.R.I. Hrs.); A. Murchie (Sec. Lt., Arg and Suthd. Highrs., T.F.), July 21st; J. S. Paton (Capt., Arg. and Suthd. Highrs., T.F.), and to be Hon. Capt.; W. H. Coghill (Sec. Lt., Sea Highrs., T.F.), July 24th; L. S. Davis (Sec. Lt., R.F.A., Spec. Res.), July 25th; D. J. Georgeson (Sec. Lt., Cord. Highrs., T.F.), July 26th; J. P. Findlay (late Sec. Lt., Aus. Commonwealth Forces), Aug. 21st.

The following Flt. Cdts. are granted temp. commns. as Sec. Lts. (A. and S.):—A. C. B. Ferguson, May 31st; S. Barker, June 7th; R. Hughes, June 10th; G. Stott, July 5th; W. A. Greene, July 14th; A. Tapping, July 19th; R. A. Gibbs, July 20th; R. T. Owen, C. W. S. Chalmers, July 22nd; S. H. Wright, July 24th; G. A. Nicholls, D. R. Trotter, July 25th; A. Dukes, W. H. August, July 26th; J. Derbyshire, Aug. 7th; H. G. Pike, J. B. Vickers, Aug. 8th; F. E. Vernon, A. J. Cobham, Aug. 9th; B. Stewart, G. Hiff, C. L. Tench, Aug. 10th.

Cdts. granted temp. commns. as Sec. Lts. (A. and S.):—B. G. W. Adams, W. E. Brotherton, M. R. Brown, F. L. Catterall, C. C. A. Clark, J. Clarke, D. Collison, J. M. S. Conning, C. A. Court, H. C. Edmeades, L. Futerman, E. A. Gray, E. Hulley, T. O. James, R. J. M. Jeffrey, C. K. Joubert, C. D. Kinmont, S. Max, A. B. McDonald, A. H. Miller, A. Morrison, R. Morton, J. M. Neall, E. G. Noble, B. Pemberton, D. W. E. G. Phillips, N. C. R. Roberts, H. R. Roberts, L. Rolland, D. R. Schonegevel, T. C. Stranger, W. B. Smith, P. J. Theron, A. R. T. Thompson, C. C. R. Thompson, T. C. Thomson, S. O. Truby, C. W. Waller, G. H. W. Wilson, Aug. 13th; Prob. Flt. Officers (late R.N.A.S.) granted temp. commns. as Sec. Lts. (A. and S.):—A. W. Steward, C. W. Treleaven, R. W. Heine, J. V. Blandford, June 28th; G. B. M. McMurdo, July 10th; C. P. Miller, E. F. Phillips, W. A. Soutar, A. D. Macpherson, K. P. Phillips, R. St. C. McLaughlin, M. D. McTaggart, July 12th; R. C. Hockey, H. C. Maisey, J. B. Risk, P. B. Thorpe, C. C. Fisher, R. A. Gunther, July 17th; R. F. Whitaker, R. G. Mollard, T. N. Leithead, F. M. Ramsey, F. I. Atkins, S. Dixon, W. G. Wheatland, R. N. Barber, July 19th; B. Hinkler, E. Munro, July 20th; V. B. Pare, M. G. Cruise, H. C. Mason, L. B. Irish, R. N. Tedbury, July 21st; F. Chalcroft, C. R. Peters, July 24th; W. E. Thomas, J. G. Dugdale, O. L. Malcolm, July 27th; Lt. S. Leslie to be Lt. (Obsr. Officer) from (A. and S.), July 28th. Sec. Lts. (late Gen. List, R.F.C. on prob.) confirmed in their rank as Sec. Lts. (Obsr. Officers):—T. E. Gohl, June 1st; J. F. Giemre, June 20th; L. Harrison, June 28th; H. L. Wilson, June 30th; A. J. Bishop, July 20th; A. E. Tompkins, July 21st; R. Digby-Worsley, July 24th; H. Watkins, K. K. White, H. R. Sturgiess, H. O. Cuffe, July 25th; L. A. Hooper, B. J. O'Meara, July 28th; A. E. Walsh, R. J. Smither, C. K. G. Brown, July 30th; R. Livingston, July 31st; J. C. Walker, Aug. 1st; W. T. J. Hall, J. G. Reynard, R. M. Doyle, Aug. 2nd; H. S. Dudson, Aug. 3rd; E. A. Sewell, Aug. 10th; E. P. Hulme, Aug. 22nd. The following are granted temp. commns. as Sec. Lts. (Obsr. Officers):—P. M. Ashton (temp. Lt. York and Lanc. R.), and to be Hon. Lt., April 1st; R. Addison, M.C. (temp. Sec. Lt., attd. E. Lanc. R.), June 12th; P. A. Lund (Lt., R. W. Fus., Spec. Res.), and to be Hon. Lt., June 13th; H. E. Power (Sec. Lt., E. Surr. R.), June 29th; T. H. Formby (Sec. Lt., R.G.A., Spec. Res.), June 30th; I. B. MacBean (Lt., King Edward's Horse, Spec. Res.), and to be Hon. Lt. July 1st; J. A. Lewis (temp. Sec. Lt., attd. S. Wales Bord.), July 24th; A. G. Lambert (Sec. Lt., Lond. R.), July 26th; R. O. Pritchard (temp. Sec. Lt., Welsh R.); H. G. Sands (Sec. Lt., Norf. R., T.F.), P. Lawrence (temp. Sec. Lt., Linc. R.), J. H. Roberts (Lt., R.F.A., Spec. Res.), and to be Hon. Lt., July 31st; B. S. Chantrill (temp. Sec. Lt., Glouc. R.), A. Ostler, M.C. (Lt., R.F.A.), and to be Hon. Lt., N. B. Eames (Sec. Lt., Manch. R., Spec. Res.), Aug. 1st; K. N. King (temp. Sec. Lt., E. Surr. R.), Aug. 2nd; H. A. H. Mould (temp. Lt., Northd. Fus.), and to be Hon. Lt., J. A. Parkinson (Lt., R. Lanc. R., T.F.), and to be Hon. Lt., (Aug. 3rd); T. J. Southern (Lt., W. Yorks R.), and to be Hon. Lt., Aug. 7th; E. T. Roocroft (temp. Sec. Lt., attd. Manch. R.), Aug. 10th; C. G. Strange (Sec. Lt., Dorset R., T.F.), Aug. 17th; I. Blackburn (Sec. Lt., Lancs. Fus. T.F.), Aug. 19th. The following Flt. Cadets are granted temp. commns. as Sec. Lt., (Obsr. Officers):—J. A. Elvin, May 18th; H. Walker, July 27th; W. I. N. Grant, F. E. Green, T. W. Hancox, O. R. Hibbert, H. Hitchon, K. H. Holley, J. C. Humphreys, B. Hutchinson, T. A. Jones, L. W. Launchbury, C. Y. Harper, R. W. Lewin, E. B. Smailes, Aug. 4th; W. R. J. Cannon, N. Connell, H. Dobing, K. W. I. Howie, E. M. Patterson, W. A. Ruxton, J. N. Schofield, G. Stannard, H. W. Wynn, H. L. Wortley, H. J. Wood, Aug. 17th; R. D. Vaughan, G. B. Powell, W. G. Perry, J. R. R. Rankin, H. Alexander, H. Bridger, H. Bell, F. J. Farr, G. R. Fairhurst, W. C. Galbraith, L. A. Drain, L. J. Whitehead, N. P. Hilton, T. N. Drake, R. I. Cox, H. G. E. Davis, Aug. 22nd. The following relinquish their commns. on ceasing to be empld.:—Lt. R. P. Ziegler (Lt. E. Ont. R.), July 2nd; Lt. R. Skelton (Lt., Dur. L.I., T.F.), July 18th; Lt. C. F. Kelsch relinquishes his commn., having been found permanently unfit for further instruction as Pilot or Observer, Aug. 24th. The following Sec. Lts. relinquish their commns., having been found permanently unfit for further instruction as Pilots or Observers:—T. E. David, D. M. Galloway, G. H. Brown, H. V. Henderson, W. L. Dawson, R. E. York, R. D. Muir, T. J. Lamb, W. Barr, S. W. Crane, Aug. 24th. The surname of Sec. Lt. (Hon. Lt.) R. L. Tilly is as now described, and not as stated on page 6228 of the "Gazette," May 28th. The notification concerning G. W. McA. Paterson (R. Scots, T.F.), Sec. Lt. (K.B.) in the "Gazette" of Aug. 6th is cancelled. The notification on page 8205 of



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the "Gazette," July 12th, concerning Sec. Lt. F. J. L. Bishop is cancelled.

ADMINISTRATIVE BRANCH.—R. Inglis, D.S.O. (temp. Maj., K.R.R.C.), is granted a temp. commn. as Maj., July 17th. The following Lts. to be temp. Capts. while empld. as Capts.:—C. S. Fulton, June 10th; L. B. Nicholls, from (O.), June 24th; (Hon. Capt.) D. A. G. Dallas, June 28th; Sec. Lt. (Hon. Lt.) S. Waring to be temp. Capt. while empld. as Capt., Aug. 1st; Lt. M. Lewis to be Lt., from (O.), April 12th; W. F. Morris (Lt., Lond. R.) is granted a temp. commn. as Lt., July 1st. The following Sec. Lts. to be temp. Lts. while empld. as Lts.;—G. H. Blake, D. C. M., May 1st; (Hon. Lt.) C. Kenyon, May 8th; (Hon. Capt.) H. A de F. Furber, and to be Hon. Capt., S. Tew, Aug 1st; Sec. Lt. T. L. Price (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt., July 16th. The following are granted temp. commns. as Sec. Lts.:—E. Chesterfield, E. J. Spearing, July 1st; R. E. Barrett, C. E. Winter, Aug. 19th; C. A. Luce (late Asst. Paymaster, R.N.V.R.), Aug. 21st. The notification in the "Gazette" of July 9th concerning P. S. Howard is cancelled.

TECHNICAL BRANCH.—Capt. (temp. Maj.) E. Graham retains his temp. rank whilst empld. as Maj., from (Ad.), July 17th; H. R. Northover, M.C. (Maj., Can. Ord. C.), is granted a temp. commn. as Maj., Aug. 1st; G. C. Milnes, M.C. (Capt. R. Lanc. R.), is granted a temp. commn. as Capt., April 1st (substituted for notification in the "Gazette, Aug. 13th), Lt. R. L. Brown to be Lt., from (A. and S.), June 17th; Sec. Lt. S. L. Smith to be temp. Lt. whilst empld. as Lt., Aug. 5th; Sec. Lt. H. A. Blaquiere (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt., May 1st; Lt. J. A. Rutherford to be Sec. Lt. and to be Hon. Lt. from (A. and S.), July 1st; the notification in the "Gazette" of June 4th, page 6,593, regarding Sec. Lt. (Hon. Lt.) F. S. S. Calthorpe is cancelled; the notification on page 9,273 of the "Gazette," Aug. 6th, concerning Sec. Lt. R. T. Belville is cancelled.

MEDICAL BRANCH.—H. V. Wells (Fleet Surgeon, R.N.) is granted a temp. commn. as Lt.-Col., Aug. 14th; P. L. Moore (late Capt., R.A.M.C.) is granted a temp. commn. as Capt., June 1st.

DENTAL BRANCH.—V. E. Mills is granted a temp. commn. as Lt., Aug. 10th.

MEMORANDA.—Maj.-Gen. Sir G. M. Paine, K.C.B., M.V.O., is granted a permanent commn. as Maj.-Gen., Aug. 23rd.

Sec. Lt. A. G. F. Nash to be temp. Capt. whilst holding a special appointment in the Ministry of Munitions, Aug. 23rd.

WAR OFFICE, Aug. 24th.

With reference to the awards conferred as announced in the "London Gazette," dated March 26th, 1918, the following are the statements of service for which the decorations were conferred:—

THE DISTINGUISHED SERVICE ORDER.

Lt. (Temp. Capt.) B. R. BOWMAN, M.C., R. War. R., Spec. Res., and R.F.C.

He has recently destroyed six enemy aeroplanes and driven down others out of control. He has at all times shown splendid courage and determination, and by his leadership and good example has contributed largely to the success of his squadron.

Capt. R. M. DRUMMOND, M.C., R.F.C.

While escorting a reconnaissance, on three hostile planes being encountered he at once attacked and drove down one of these, although he was being himself attacked in the rear by the remaining two. Drawing these latter away from the reconnaissance machine, he turned, attacked, and followed one of these down to a lower altitude, despite heavy anti-aircraft fire. This machine was then seen to strike the ground and turn over. He then attacked the third machine, and, after a long burst of fire at close range, both wings of the enemy 'plane were observed to collapse in the air. The whole action was characterised by the great skill and daring of this officer.

A BAR TO THE MILITARY CROSS.

Capt. W. E. MOLESWORTH, M.C., R. Muns. Fus. and R.F.C.

He has done excellent work as patrol leader, handling his formations with great skill and courage. He has destroyed four enemy machines and driven several down out of control.

Temp. Capt. F. G. SAUNDERS, M.C., R.F.C.

On three separate occasions during a month he has fought a hostile machine, pursued it over the enemy's lines, and driven it down to earth, where it was completely wrecked. He has shown the most consistent gallantry and skill in action.

AUSTRALIAN IMPERIAL FORCE.

Lt. R. M. SMITH, M.C., Aust. Light Horse R. and Aust. F.C.

He was one of two pilots who carried out a remarkable series of photographs in one flight, completely covering an important area of 45 square miles. On a later occasion he successfully bombed an important bridge head from a low altitude, and his work throughout, as well as his photography, has been invaluable and characterised by the most consistent gallantry.

THE MILITARY CROSS.

Temp. Lt. R. A. GEORGE, Gen. List and R.F.C.

He has done valuable work in ranging batteries, bombing at night, and in attacking enemy troops with machine-gun fire, often under the most adverse weather conditions. On one occasion he ranged a siege battery on a hostile battery, destroying four of its gunpits and causing fires and explosions. His splendid example has been an inspiration to his squadron.

Temp. Lt. G. E. GIBBS, R.F.C.

On one occasion he pursued an enemy aeroplane to a very low altitude over the enemy lines and succeeded in driving his opponent to the ground. On a later occasion he and another pilot fought a hostile machine to within 200 ft. of the ground over hostile territory, where it fell, completely wrecked. He has displayed consistent gallantry and determination in action.

Temp. Capt. T. GRAN, Gen. List and R.F.C.

He bombed enemy aerodromes with great success and engaged enemy searchlights, transport, and other targets with machine-gun fire, He invariably showed the greatest determination and resource.

Temp. Sec. Lt. REGINALD WILLIAM HOBBS, S. Wales Bord. and R.F.C.

For conspicuous gallantry and devotion to duty. He carried out many reconnaissances, always flying a long distance over the enemy lines or over entirely new country. He invariably obtained successful photographs, and brought back valuable information. He showed great keenness and determination at his work.

Temp. Capt. ROBERT KIRBY KIRKMAN, Gen. List and R.F.C.

For conspicuous gallantry and devotion to duty. He led a patrol of eleven aeroplanes, and through his skilful manœuvring and leadership the patrol destroyed four enemy scouts, and drove down three more out of control. On several other occasions he has driven down and destroyed hostile machines, and has always set a fine example of courage and determination.

Lt. REGINALD STANLEY LARKIN, R.F.C., Spec. Res.

For conspicuous gallantry and devotion to duty on long-distance bomb raids. He successfully bombed enemy aerodromes and railway communications on several occasions, and his skill and determination in reaching his objectives, frequently under adverse weather conditions, were a splendid example to the squadron. On one occasion, though his machine was partially disabled by the anti-aircraft fire, he reached his objective and obtained a direct hit.

Sec. Lt. (temp. Capt.) KENNETH MALISE ST. CLAIR GRAEME LEASK, Devon R. and R.F.C.

For conspicuous gallantry and devotion to duty in leading offensive patrols against superior numbers of the enemy. His patrol twice engaged more than double their own numbers, and drove the enemy back into his own lines. He drove down three enemy machines, which were seen to be destroyed, and accounted for eleven in all. He showed splendid determination and initiative.

Sec. Lt. GEORGE EDWARD HENRY MCELROY, R.G.A. and R.F.C.

For conspicuous gallantry and devotion to duty. He has shown a splendid offensive spirit in dealing with enemy aircraft. He has destroyed at least two enemy machines, and has always set a magnificent example of courage and initiative

Temp. Capt. FRANK NUTTALL, R.F.C.

For conspicuous gallantry and devotion to duty. Seeing another machine driven down by hostile fire in the enemy's line, he glided to the ground under heavy fire, and dispersed the enemy with his machine-gun. He took the stranded pilot on board and got safely away. By his prompt and courageous action he saved his comrade from being taken prisoner.

Sec. Lt. THOMAS LANCASTER STEELE, Gen. List and R.F.C.

For conspicuous gallantry and devotion to duty. When instructed to attack a hostile concentration he encountered heavy machine-gun and rifle fire, his petrol tank being pierced. Despite the risk of his tank catching fire, he continued to his objective, where he obtained excellent results from bombs dropped from 400 ft. On a later occasion, though shot through his arm, he continued to his objective and obtained excellent results. His courage and determination were most praiseworthy.

Temp. Capt. JOHN HENRY TUDHOPE, Gen. List and R.F.C.

For conspicuous gallantry and devotion to duty. He showed a splendid offensive spirit in continually attacking enemy aeroplanes. He has destroyed three enemy machines and has driven others down out of control, and always set a splendid example of courage and initiative.

Temp. Sec. Lt. ARTHUR BARLOW WHITESIDE, Gen. List and R.F.C.

For conspicuous gallantry and devotion to duty. He carried out several night bombing raids with great success, attacking enemy aerodromes, trains, and billets, often from a low altitude. On one occasion he attacked a train with his machine-gun from a height of 100 ft. He showed splendid skill and initiative.

Temp. Capt. HORATIO THOMAS OTTER WINDSOR, Gen. List and R.F.C.

For conspicuous gallantry and devotion to duty. He carried out several night bombing raids with great success, attacking enemy aerodromes and railway communications, often from a low altitude. He acted as leader of a long-distance raid in bad weather conditions, but reached his objective and obtained direct hits. He set a splendid example of skill and determination to the pilots of the squadron.

Capt. RICHARD NIGEL WOLTON, R.F.A. and R.F.C.

For conspicuous gallantry and devotion to duty. He performed most successful work in co-operation with artillery, often under the most adverse weather conditions and at very low altitudes. On one occasion during a flight of four and a half hours he successfully ranged a siege battery on one of the enemy's batteries and destroyed it, although he was attacked by enemy aircraft. He also attacked the enemy battery with bombs and machine-gun fire. By his courage and determination he has always set a splendid example to his squadron.

Temp. Sec. Lt. ALFRED JOHN WRIGHT, Gen. List and R.F.C.

For conspicuous gallantry and devotion to duty. He carried out many reconnaissances at great distances over the enemy's lines and often over new and difficult country. On many occasions, despite adverse weather conditions, he obtained successful photographs and brought back valuable information. He has always shown splendid courage, determination, and skill.

AUSTRALIAN FORCE.

Lt. RONALD ALBERT AUSTIN, Aust. F.C.

For conspicuous gallantry and devotion to duty. He was one of two pilots who carried out a remarkable series of photographs in one flight, which covered an area of 45 square miles. On an earlier occasion he alone had photographed in the completest detail an area of 20 square miles, in spite of intense anti-aircraft fire. During recent operations he has led all important bombing raids, and his skill and gallantry have been largely responsible for the excellent results attained. Previous to this he had landed in enemy country and rescued another pilot, who had been forced to land through engine trouble.

WAR OFFICE, Aug. 26th.

The following are mentioned for distinguished and gallant services and devotion to duty in a dispatch addressed to the Chief of the General Staff, India, by Lt.-Gen. W. R. Marshall, K.C.B., K.C.S.I., Commanding-in-Chief, Mesopotamian Expeditionary Force, and received by the Secretary of State for War:—

ROYAL AIR FORCE.

Bradley, Maj. R. A. (formerly N. Staff R.).
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(*Continued on page 779.*)

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THE 300 H.P. MAYBACH ENGINE.

The following Official Report on the 300 h.p. Maybach engine is published by the kind permission of the Technical Department of the Air Ministry, to whom the thanks of the Editor are due.

INTRODUCTORY NOTE.

The general distinctive features of the design of the Maybach Aero Engines are, comparatively speaking, as well known amongst aeronautical engineers in this country as any of the enemy aero engines in service; firstly, by reason of the adoption of the old Wolseley-Maybach aero engines, the design of which was acquired before the war for airship work, and which was based on the design of the original Maybach engine; and, secondly, through the publication of the somewhat incomplete details of construction of the Zeppelin-Maybach engines and their installation, which were collected under great difficulties from the remains of the several Zeppelin airships brought down during the war.

These engines, in almost every case, were so badly damaged by fire that it was found almost impossible at the time to compile any really detailed report on their design, or of their power and general performance.

A new and more powerful type of Maybach engine is now being used in service by the enemy, which, according to French reports, develops over 300 h.p., and which possesses great efficiency.

During the past few months several of the latest type of Rumpler machines have been captured fitted with the new 300 h.p. Maybach engines. (These engines in their general design follow more or less the principle of the Zeppelin-Maybach 240 h.p. engines, and a detailed report, together with a full description of the constructional details and the general running performance of the new engine, is herewith given.)

The following report on the design of the 260/300 h.p. Maybach engines is based on a detailed examination of the engine (No. 1261) taken from a Rumpler two-seater biplane (G.120), known as the C.4 type. This machine was brought down in France by a shot which perforated the carburettor and water pump, on Jan. 18th, 1918. The machine was, unfortunately, completely destroyed by fire on landing, but the engine was captured intact and little damaged. After slight repairs this engine has been put into running condition and tested for power, consumption, etc., at

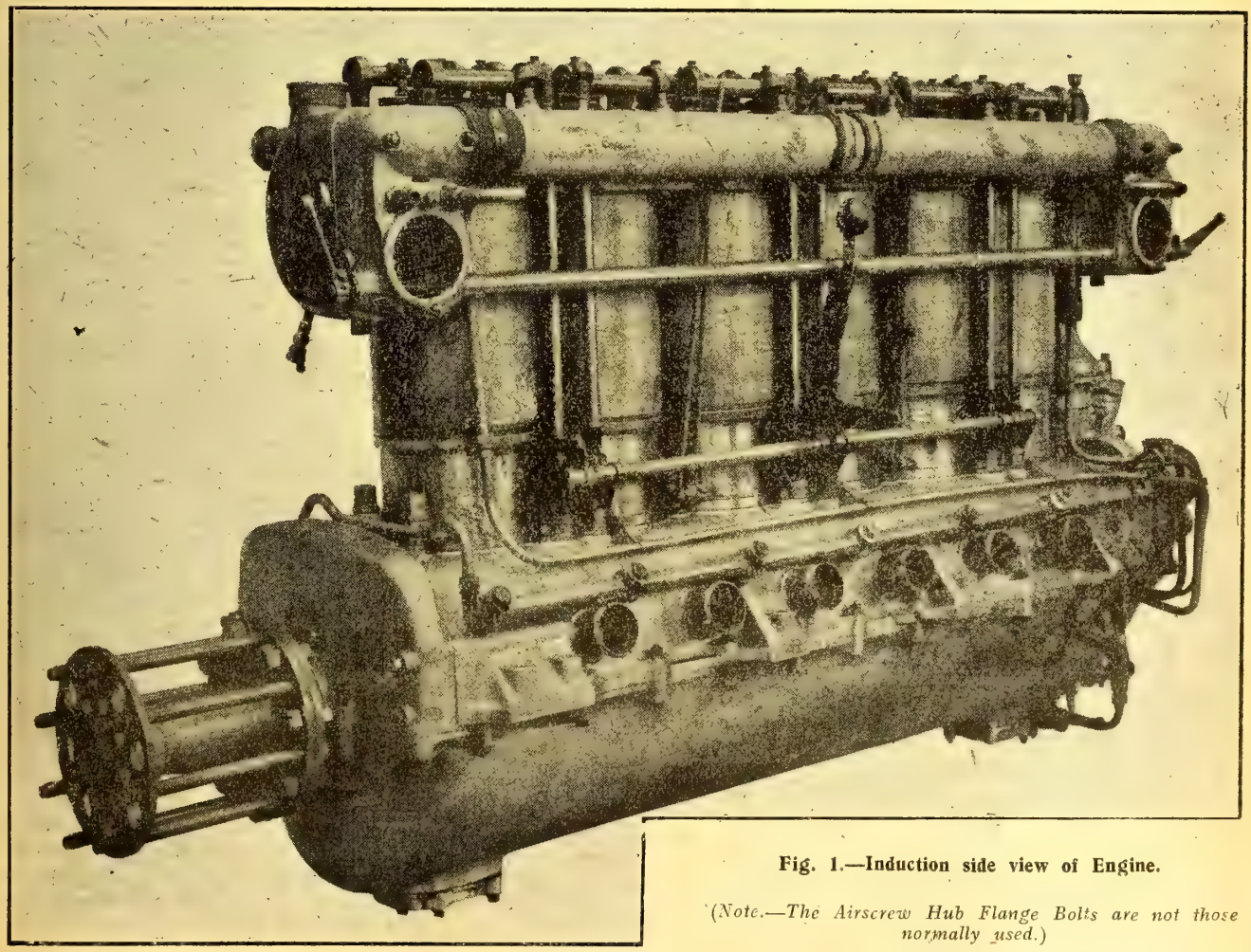


Fig. 1.—Induction side view of Engine.

(Note.—The Airscrew Hub Flange Bolts are not those normally used.)

R.A.E. The results of these tests are given in the following report, together with metallurgical analyses and mechanical tests of materials and alloys used in the principal parts of the engine.

A complete list of the details of the design is given in the various data at the end of this report, including the percentages of weights of all parts, and the results of separate tests carried out on the carburettor and a new design of petrol pump which is used in conjunction with the interesting high-altitude carburettors.

A brief description of the Rumpler C.4 and 5 type aeroplane, in which these new 300 h.p. Maybach engines are fitted, will, no doubt, be of some interest here. Full details of this machine, however, have already been issued in a published report by the Section Technique de L'Aeronautique Militaire.

As shown elsewhere, the Rumpler C.4 machine is a two-seater biplane, corresponding, more or less, to our D.H.4, and is generally fitted with a 260 h.p. Mercédès engine. These machines are designed for long-range artillery reconnaissance and photography, and are armed with two guns—one Spandau fixed in front of the pilot's seat, firing through the propeller, and a swivelling gun mounted in the observer's seat behind. A two-bladed airscrew is fitted, and a semi-circular honeycomb radiator of unusual design is slung above the engine from the centre section. Other details of the construction of the Rumpler machine are shown in the photograph previously mentioned.

These machines are generally flown according to report at high altitudes—i.e., from 15,000 to 17,000 ft.—until over the lines, and from the French reports, the new 300 h.p. Maybach engines are more flexible and regular in running than the 260 h.p. Mercédès engines, and are generally preferred by the German pilots.

Compared with the 260 h.p. Mercédès engines fitted in these machines, the new Maybach engines are credited with attaining an increase of 200 r.p.m. at altitudes above 2,000 ft., and also possess greater efficiency in speed and climb in the Rumpler biplanes.

Total weight of machine fully loaded, approx. = 3,439 lbs.

GENERAL FEATURES.

The 300 h.p. Maybach presents several unusual and interesting details, and as compared with the old 240 h.p. Zeppelin-Maybach design, the new engines are undoubtedly a great improvement in general design and efficiency. The quality of the workmanship of every part, including the exterior finish throughout, is exceptionally good, and the working clearances are carried to very fine limits. Compared with any other of the types of enemy engines, the workmanship is undoubtedly of a very much more finished nature; every part, nevertheless, shows the usual German characteristics of strength and reliability, combined with standardisation of parts and ease of manufacturing, in preference to the saving of weight.

The general lay-out of this engine follows the usual German six-cylinder vertical type. The compression ratio is exceptionally high, viz., 5.94 : 1, which necessitates the use of very heavy pistons and connecting rods; in these particulars this engine follows the previous Maybach practice, but the adoption of a cast-iron floating bush in the little end bearing is an interesting development.

Four overhead valves per cylinder are fitted—i.e., two inlet and two exhaust. These are operated by rocker levers mounted on roller bearings in brackets fixed to the cylinder heads, as shown in Fig. 2, and by push rods on each side of the cylinders actuated by separate inlet and exhaust camshafts.

The camshafts run in plain bronze bearings in the crank-chamber, and are splash lubricated.

Little alteration has been made in the design of the massive crankshaft, which runs on plain white-metal lined bearings throughout, and is provided with the well-known Maybach type centrifugal pressure lubrication system to the crank-pins, thence to the gudgeon pins through small pipes, inside the hollow connecting rods.

The three separate and detachable gear oil pumps, which are situated in the bottom of the base chamber, are of new design.

The pump driving shaft at the front end is driven through a ratchet gear on the front scavenger pump, apparently with the object of preventing an air lock in the lubrication system in the event of back-firing.

A double-acting, oil-sealed petrol pump of unusual design is now fitted. This is driven off an extension of the main oil pump spindle at the rear end of the base chamber, and works, of course, in conjunction with the two separate carburettors. These are of the well-known Maybach type, and have been only slightly modified; as shown in Figs. 1 and 2, they are attached, as in the Zeppelin engines, to the front and rear cylinder water jackets. A full description of the functions and workings of this interesting type of carburettor is given towards the end of this report.

The well-known Maybach induction type starting gear is fitted, but is slightly modified in design.

The whole of the induction system and the oil-condensing

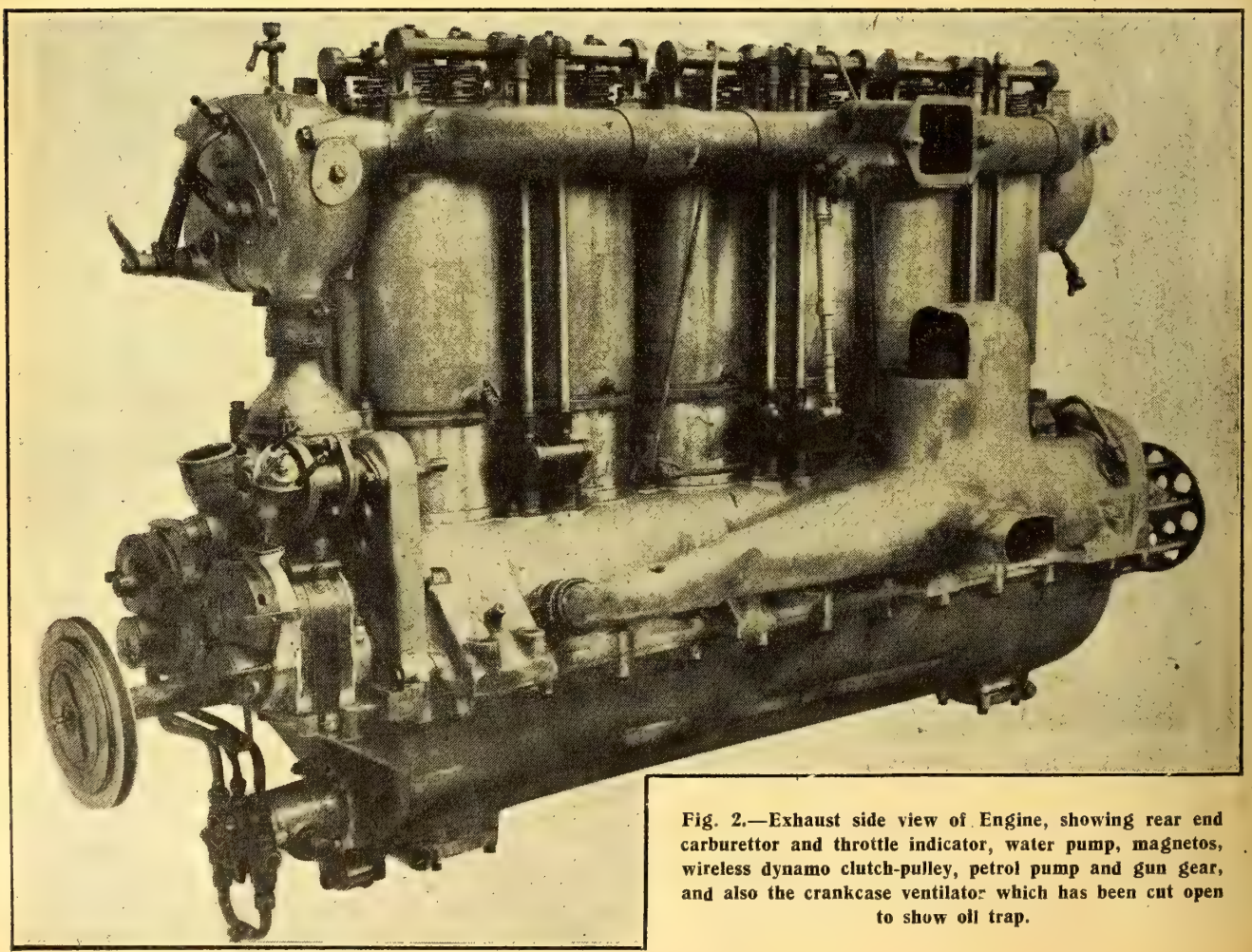
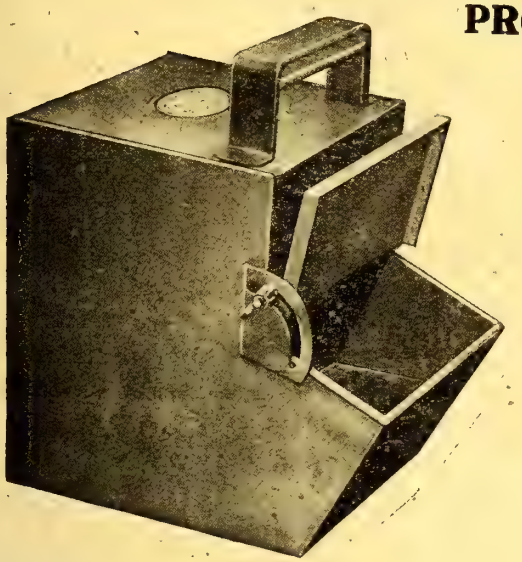
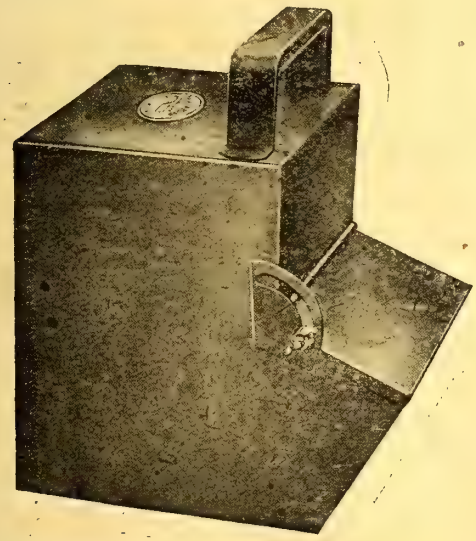


Fig. 2.—Exhaust side view of Engine, showing rear end carburettor and throttle indicator, water pump, magnetos, wireless dynamo clutch-pulley, petrol pump and gun gear, and also the crankcase ventilator which has been cut open to show oil trap.

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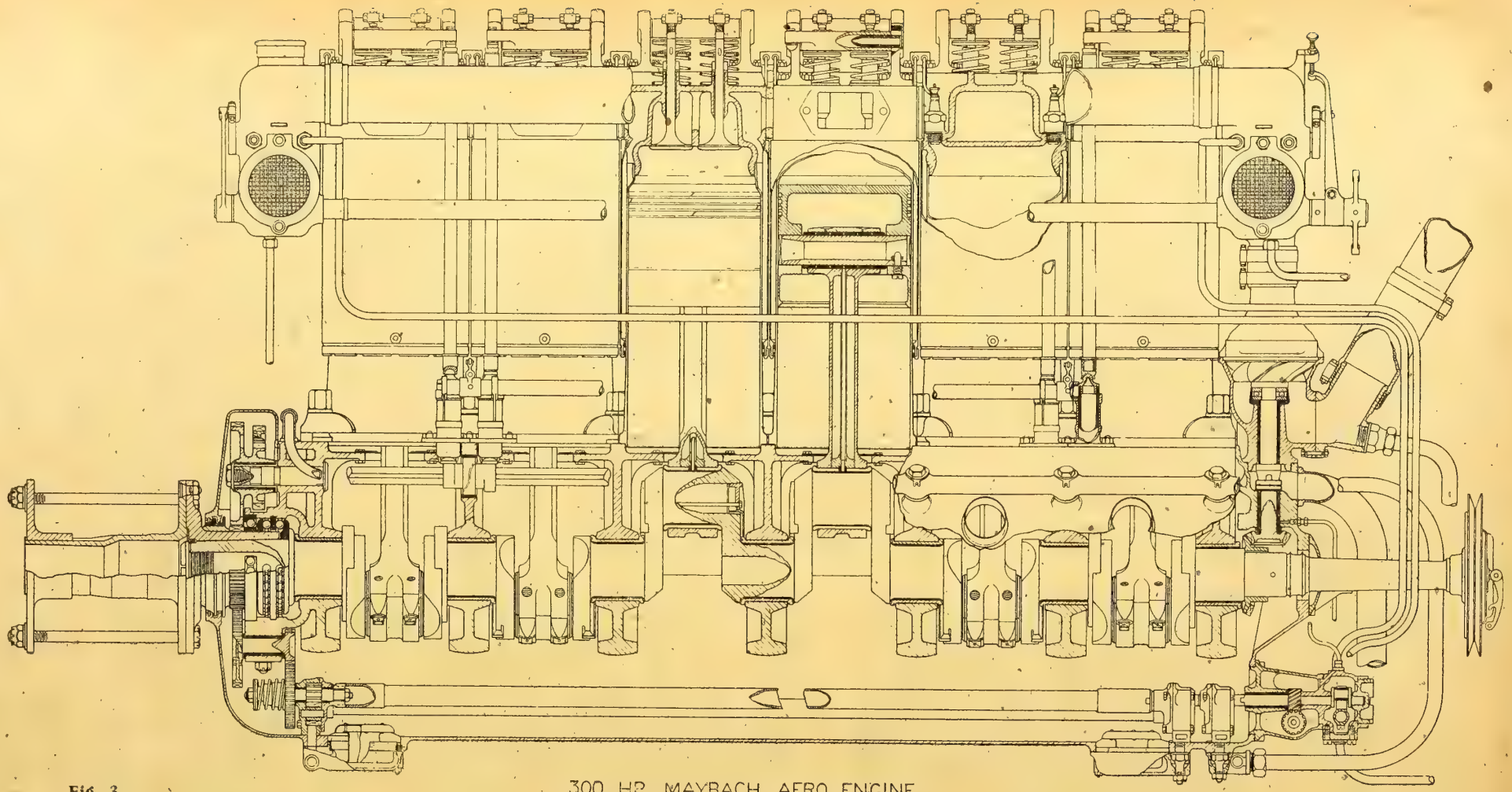


Fig. 3.

crankcase ventilating system is an interesting point in the design of this engine, as is also the method of attaching the airscrew-hub driving flange on the tapered front end of the crankshaft.

Practically no alteration has been made to the general design of the very simple and efficient type of water pump, which delivers directly into the bottom of the rear end carburettor water jacket as in the old Maybach engines. Ignition is by two Z.H.6 type Bosch magnetos, which are driven directly off the rear ends of the camshafts; the position of the sparking plugs in the cylinder heads is a point of interest dealt with in detail in the following description.

DETAILS OF CONSTRUCTION.

Cylinders.

In comparison with the Zeppelin-Maybach engines, the cylinders of the new 300 h.p. Maybach engines are of very much lighter construction; and, as will be seen from the photographs and sectional drawings, are of a wonderfully clean design. Each cylinder shows practically a rectangular view from almost any point of view, with no excrescences or extensions. The whole construction of the cylinders, and particularly the formation of the cylinder head, presents many interesting details of design.

Referring to the sectional drawing, Fig. 4, it will be seen that each cylinder is built up of a thin steel barrel, machined and ground to 165 mm. bore, and machined on its outer surface to a thickness of 3 mm. The thickness is increased from 3 mm. at the bottom of the water jacket to 4.5 mm. at the cylinder base flange. Into the top of the cylinder barrel is screwed the cylinder head, which is of cast-iron. A detailed sketch of this screwed joint is shown in Fig. 5. The screw thread, it will be noted, is 2.3 mm. pitch, buttress thread. A soft brass washer is fitted at this joint between the cylinder head and the top face of the screwed portion of the cylinder barrel.

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The bottom of the cylinder barrel extends only 3.5 mm. below the base flange into the registering joint of the crank-case, and the bore of the cylinder is very little chamfered.

The design of the cylinder heads and the formation of the water passages round the twin inlet and exhaust valves is unusual, and the double inlet and outlet water connections between each pair of cylinders are of new design. The formation of these twin water connections is clearly shown in the detail sketch of the cylinder head (Fig. 6), together with the water passages cast round the sparking plug bosses; the latter are somewhat inaccessibly situated in the space between the two cylinder head water joints. The two semi-circular bosses which are cast on the sides of the cylinder water joints are provided for the attachment of the two carburettors, which are fixed to the front and rear cylinders by long studs screwed into these bosses in the water joints. To allow for the interchangeability of the cylinders, these holes are drilled in every cylinder; when

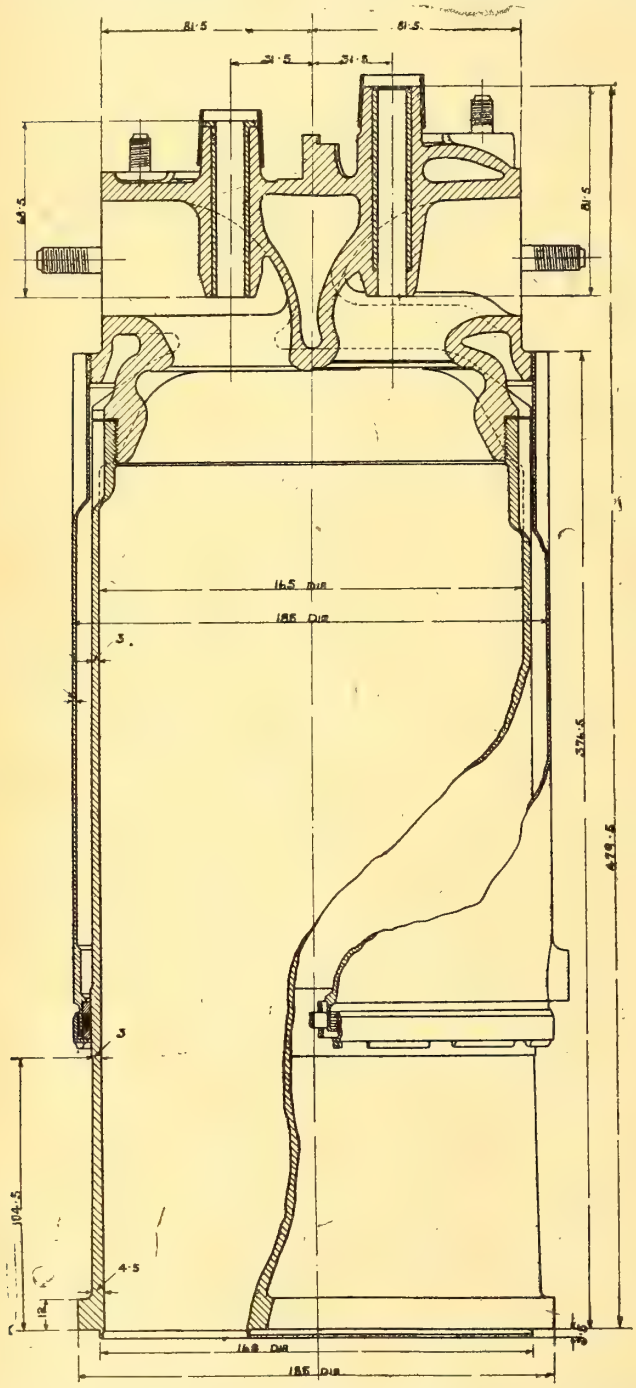


Fig. 4.—Cross-Section of Cylinder through inlet and exhaust valves, and section of cylinder barrel and water jacket on cylinder central axis.

the cylinder is not assembled at the front or rear, they are plugged with brass grub screws as shown in the sketch.

An interesting point of design in these cylinders lies in the fact that no water connections between the cylinders are made other than the twin head-joints referred to. (This principle is similar to that used in the cylinders of the Zeppelin-Maybach engines; these were provided with one large water joint, 5 in. diameter, between each pair of water jackets, which was an

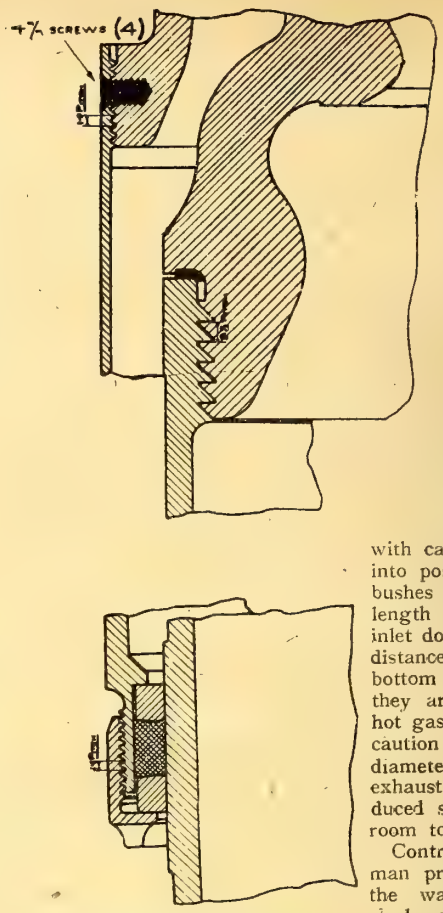


Fig. 5.—Details of Cylinder head and water jacket screwed-joints.

extension of the cast-iron head. The cylinder barrels were also of cast-iron, and were fitted with two inlet and three exhaust valves per cylinder.)

The exhaust valve pockets are provided with an additional water passage above the exhaust port, and cast so as to give a free water space completely round the centre portion of each exhaust valve-stem guide.

The valve guides cast in the cylinder heads are fitted with cast-iron bushes pressed into position. The exhaust bushes do not extend the full length of the guides as the inlet do, but are kept back a distance of 10 mm. from the bottom of the guide, so that they are protected from the hot gases. As a further precaution against seizing, the diameter of the bottom of the exhaust bush is slightly reduced so that the bush has room to expand.

Contrary to the usual German practice of building up the water jackets of sheet steel acetylene-welded at the joints, the water jackets are

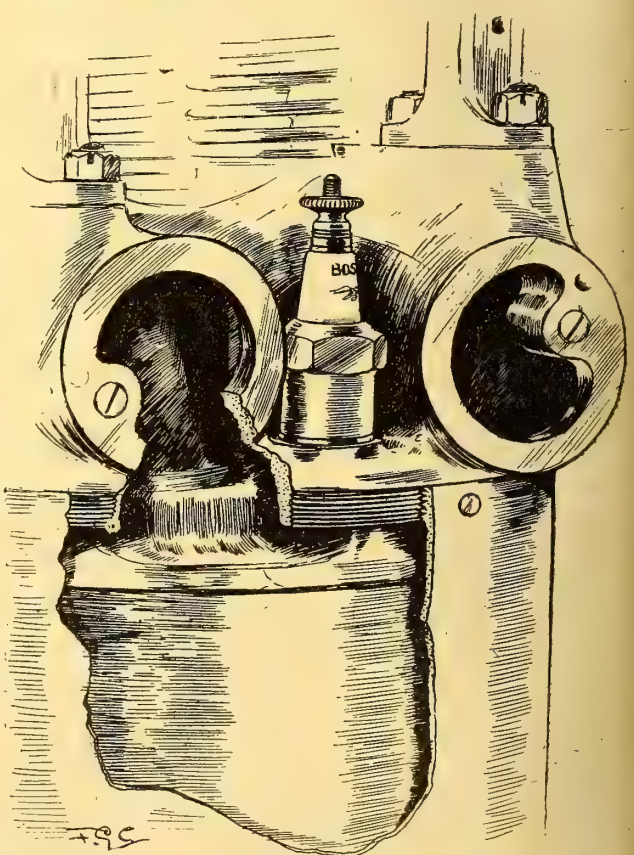


Fig. 6.—Sketch of Cylinder head, showing water passages and connections.

machined from cylindrical steel forgings, which, as shown in Fig. 5, are screwed on to the flange machined on the cylinder head; the pitch of this thread is 1 mm. This screwed joint is finally sweated in position with soft solder, the whole

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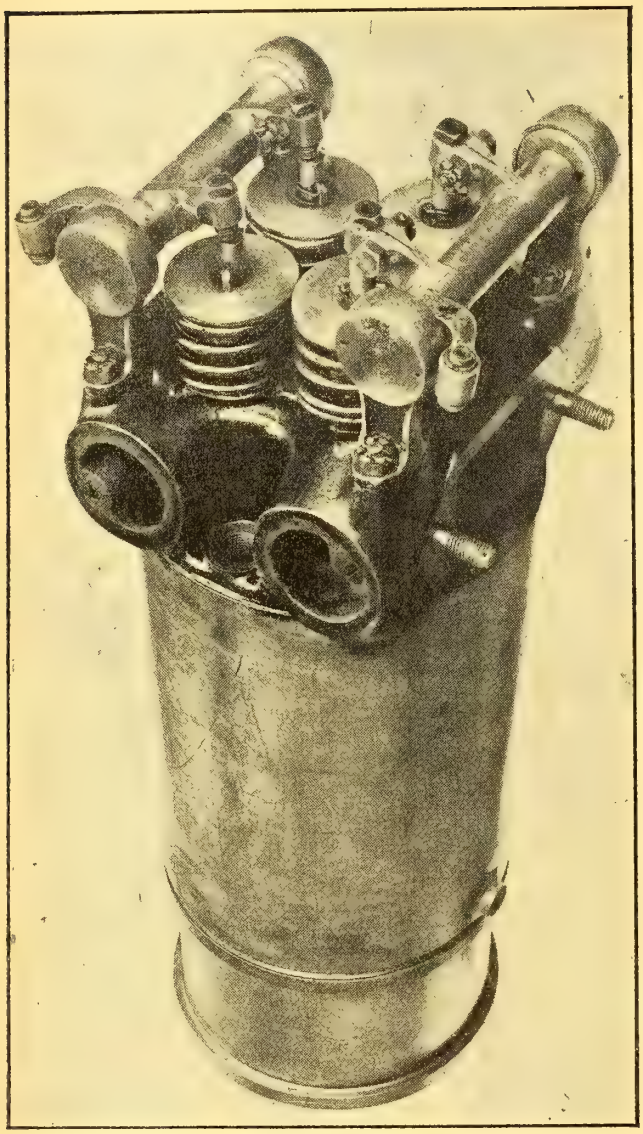


Fig. 7.—Cylinder, complete.

depth of the screwed portion having apparently been previously tinned; the joint is locked with four 6 mm. grub screws.

The whole of the water jacket is machined both on the inside and also on the outer surface to a thickness of 1 mm. The water jackets extend to 104 mm. from the base of the cylinders, or, roughly, to two-thirds of the total length of the cylinder barrels; but, as will be noted, the water space is exceptionally narrow—i.e., 7 mm.

The only water passages from the cylinder head to the annular water space of the water jackets is through the openings or passages cast in the cylinder heads encircling the sparking plug bosses, and situated directly below the twin water connections. The formation of these water passages leading from the head of the jacket is made clear in the perspective sketch (Fig. 6).

The water jacket capacity of one cylinder = 1,284 c.c.s.

Fig. 5 shows an enlarged view of the lower joint between the cylinder barrel and the water jacket. This joint consists of a soft rubber composition packing ring, compressed in position between two steel rings by a large ring which screws on to the bottom of the water jacket by a fine pitch thread in the manner shown in the sketch. This joint is, to a certain extent, flexible, and allows for the relative expansion between the cylinder barrel and the water jacket.

Small drain plugs are provided at the bottom of each cylinder water jacket; these are screwed into bosses welded into the water jackets on the exhaust side. The combustion chamber is circular, but it is slightly recessed below all of the four valve seats, which are all of the same diameter—i.e., 54 mm.

The area of both the inlet and exhaust ports is 30.15 sq. cm. = 4.66 sq. ins.

The clearance volume of one cylinder = 778.9 cub. cm. = 47.54 cub. ins., giving a compression ratio of 5.94 : 1.

Short pieces of aluminium tube are fitted over the top ends of the lugs in the cylinder heads forming the valve stem guides. These are shown in Fig. 5, and are apparently provided for

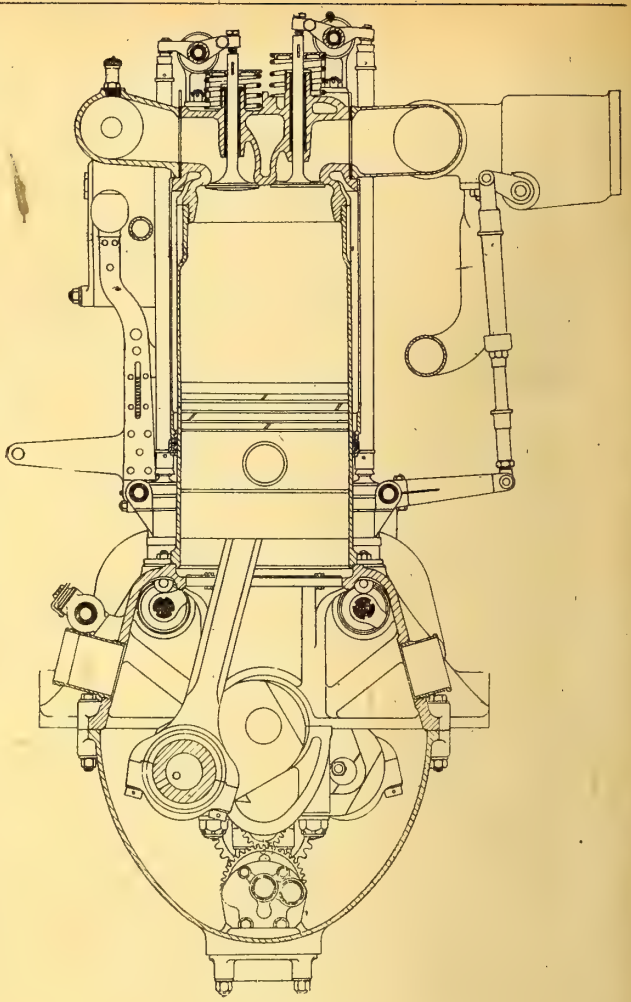


Fig. 8.—Cross-Section of Engine.

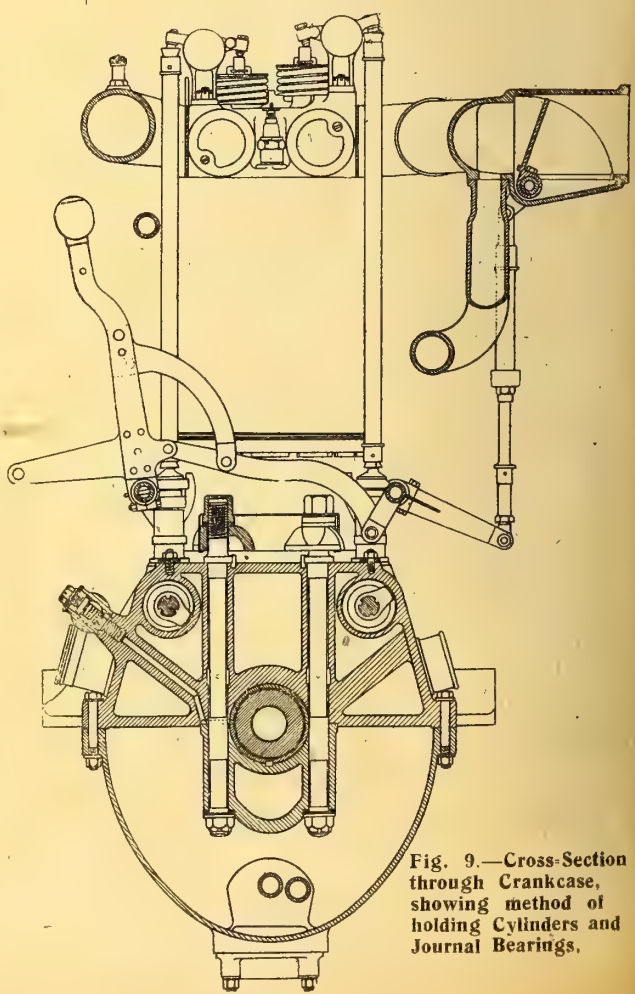


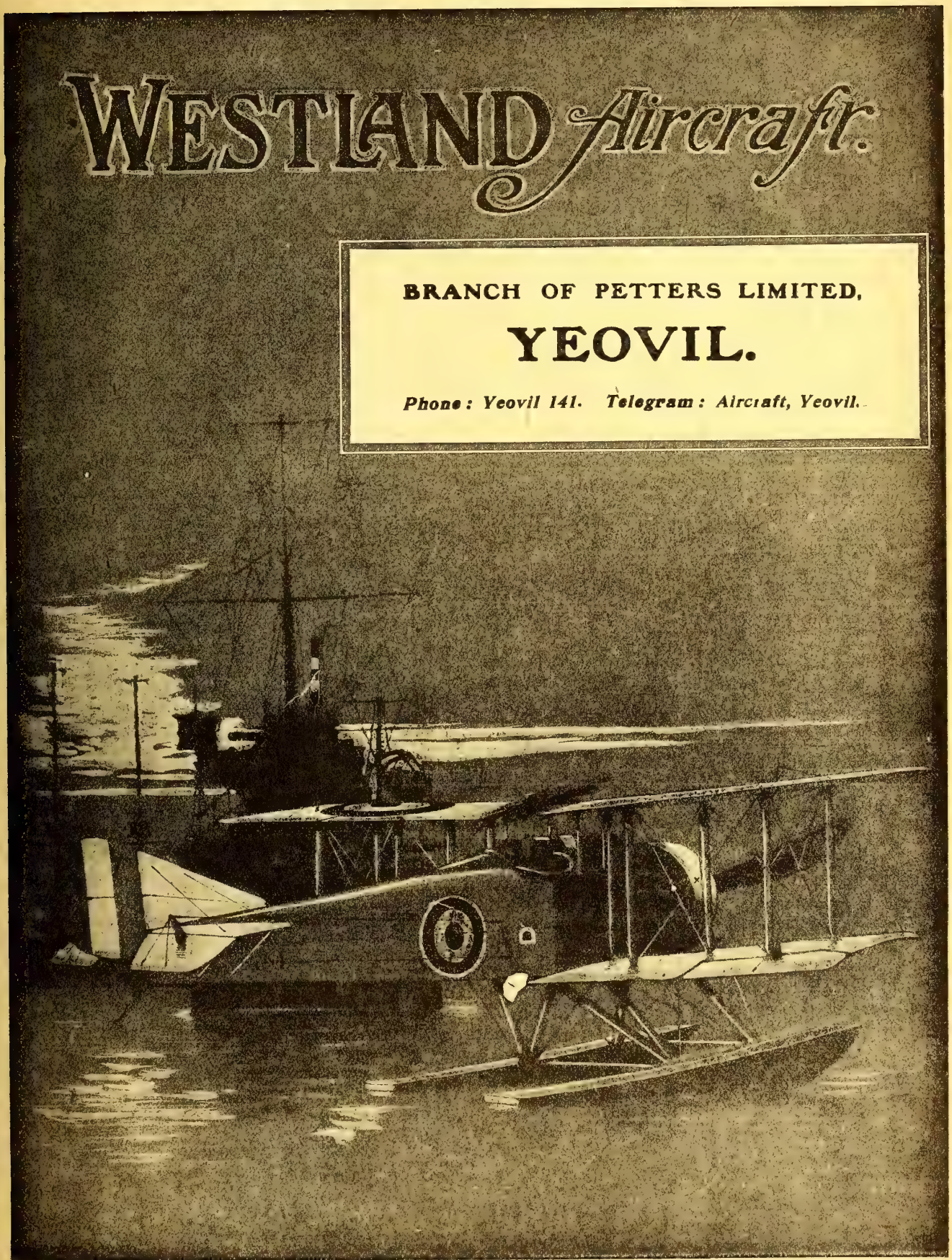
Fig. 9.—Cross-Section through Crankcase, showing method of holding Cylinders and Journal Bearings.

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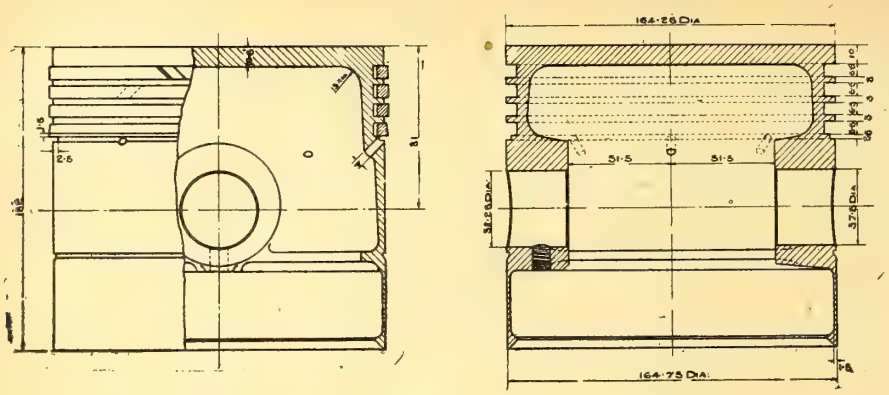


Fig. 10. Details of Pistons, gudgeon pins and floating small-end bushes.

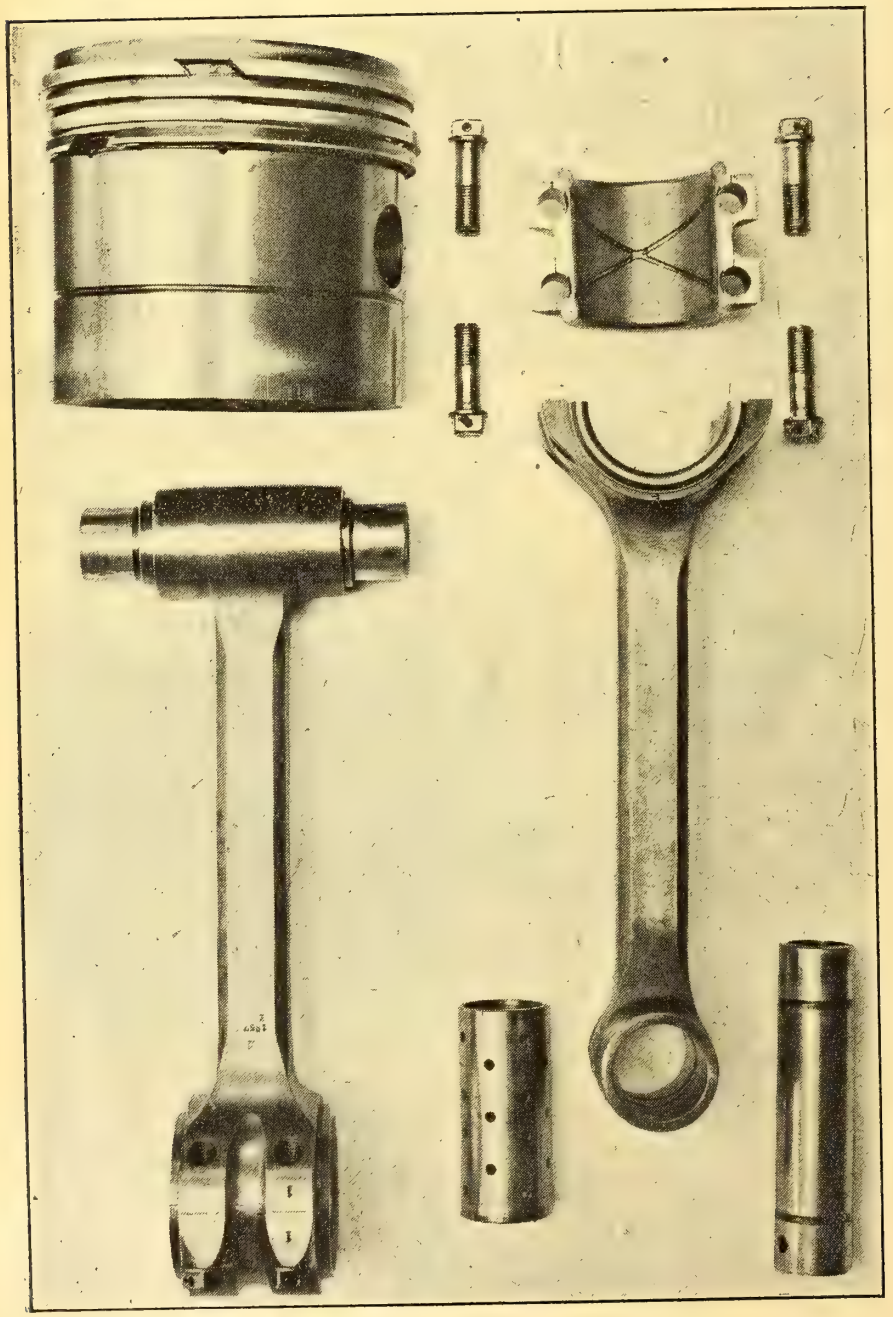


Fig. 11. View of Piston, connecting rod, big end bearing cap, gudgeon pin, and floating small end bush.

lubrication purposes. Thin sheet steel plates are bolted to the inlet and exhaust ports of the cylinder heads to stiffen up the engine.

Pistons.

Very little alteration has been made to the general design of the piston in comparison with the smaller Maybach engines. The pistons are of cast-iron, and weigh 12.3 lbs. each, complete with rings. Four rings are fitted all above the gudgeon pin, the lower one being a scraper ring. All the rings are concentric, and are 6.5 mm. wide (vertically) and 5.5 mm. deep, the depth of the ring grooves being 6 mm.

The pistons, as will be seen in Fig. 10, are quite flat on both the top and bottom surfaces of the crown, which is 10.5 mm. in thickness. Eight 4 mm. return oil holes are drilled through the piston below the scraper ring in the usual way.

The rings are cut diagonally at 45 deg., no locating pegs being fitted, and the width of the ring gap in the cylinder is 1.39 mm. = 0.055 in.

All the piston rings are machine hammered on their inner surfaces. This process, which is now extensively used, and is well known, consists of subjecting the inside face of the ring to a series of mechanical hammer blows at gradually increasing distances apart. The process shows a large number of small transverse depressions extending nearly the width of the ring on the inner surface. These depressions caused by the hammer are approximately 1 mm. apart at the back portion of the ring—i.e., the part of the ring farthest from the gap—and increase in mathematical progression to about 4 mm. apart towards the front of the ring up to about one inch, on either side of the gap. This mechanical hammering of the inside ring has the effect of giving the desired uniform pressure to the concentric ring against the cylinder wall.

The holes for the gudgeon pin are bored eccentrically in the gudgeon pin bosses, giving a thickness of metal of 14 mm. above and 9 mm. below the gudgeon pin. An oil groove is cut in the piston skirt below the gudgeon pin, evidently to assist the scraper ring and the piston lubrication. The inside of the skirt is machined up as far as the bottom of the gudgeon pin bosses, and a bevelled lip is turned on the bottom flange of the skirt. The inside of the piston is also machined flat across the head, and down as far as the top of the gudgeon pin bosses with a 15 mm. radius; an annular rib is cast on the inside of the skirt to reinforce the gudgeon bosses.

Other details of the design of the pistons are given in the section drawing Fig. 10.

Gudgeon Pins.

The gudgeon pins are 159 mm. long, slightly bevelled at the end, and are fixed in position in the piston by a single cheese-headed 9 mm. set screw in the usual way and locked with a split pin.

The gudgeon pins are hardened and ground to three parallel outer diameters, being made of smaller diameter at one end than the other. The centre portion which makes the small end bearing is 38 mm. diameter, and the two ends which fit into the gudgeon pin bosses are 37.5 and 38.25 mm. diameter respectively.

The gudgeon pins are bored 23 mm. diameter in the centre, tapering to 28 mm. at each end.

Floating small end bushes are now fitted to the gudgeon pin in the connecting rod smaller ends. These floating

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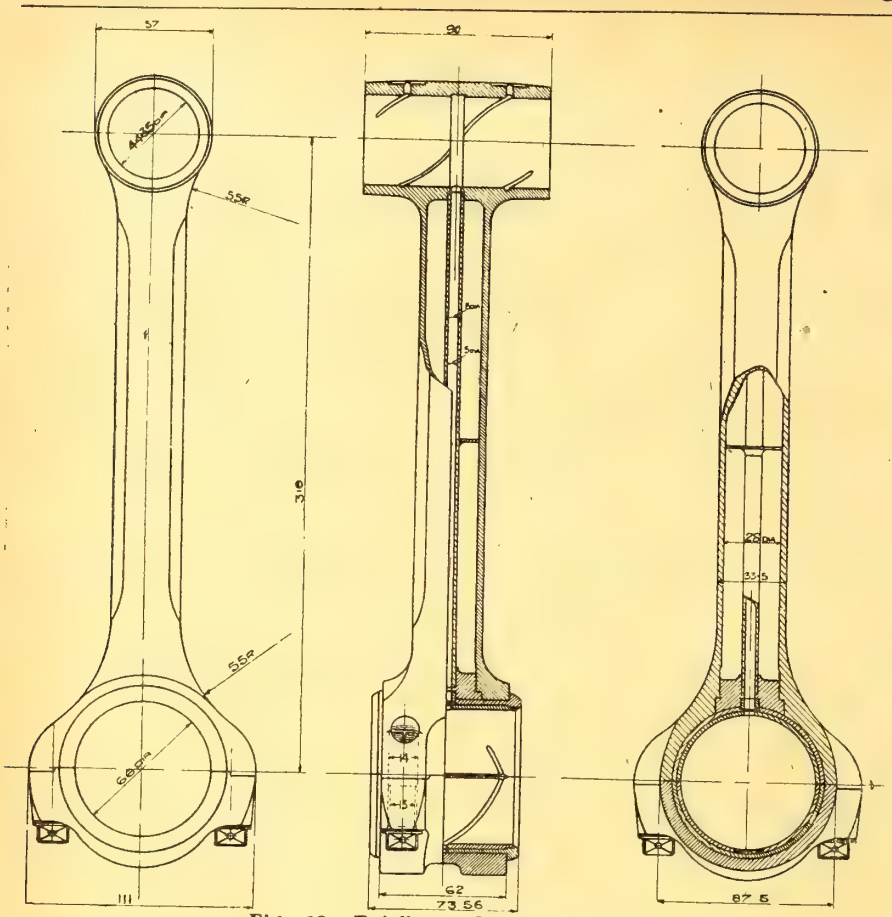


Fig. 12.—Details of Connecting Rods.

bushes are made of cast-iron of a very soft nature. The effective bearing length of the floating bushes is 93 mm., and their external diameter is 44.3 mm. For lubrication purposes a number of 4 mm. holes are drilled and counter-sunk on the outside.

The projected area of the small end bearing surface on the gudgeon pin = 35.35 sq. cm., and the bearing surface in the connecting rod small end = 39.9 sq. cm.

The weight of each gudgeon pin = 1.75 lbs., whilst the cast-iron floating bushes weigh 0.62 lb. each.

Details of the gudgeon pins and the floating connecting rod small end bushes are given in Figs. 10 and 11.

Connecting Rods

Following the usual Maybach design, the connecting rods are of square section bevelled at the four corners, and bored up the centre from the big end with a 28 mm. diameter hole, which is screwed and plugged, as shown in Fig. 12.

The big end bearing cap is secured by four 14 mm. bolts, which are screwed 1.5 mm. pitch into the top half of the connecting rod big ends.

The inner surface of the big end bearing shells are machined with a screw-cutting tool which leaves a fine pitch screw thread. This provides a serrated bedding for the white-metal lining.

No locking nuts are fitted to the big end bolts, but the square heads of the bolts are drilled, and prevented from becoming unscrewed when in position by a 4 mm. diameter pin, which is long enough to pass through the heads of each pair of bolts.

Two helical grooves 2 mm. wide are cut in the big end bearings. These oil grooves intersect each other on the centre of the bottom half of the bearing, as shown in Fig. 11; the oil ways cut in the top half of the big end bearing metal are only taken half way on each side.

The little end floating bushes already referred to are lubricated by a 5 mm. steel pipe, which is fixed in the centre of the hollow connecting rods, and the holes drilled in the floating bushes communicate with helical grooves cut in the small end. An annular groove is cut round the centre of the small end bearing, which communicates with the central oil pipe. The method of securing this oil pipe at each end inside the rod, and the steel disc, which supports the centre of the oil pipe in the bore, are shown in the sectional drawing.

The total side clearance of the big end bearing between the sides of the crank-webs = 0.44 mm. and the float of the small end = 11.8 mm.

Total weight of the connecting rod complete with floating bush = 8.93 lbs.

Weight of big end = 5.625 lbs.

Weight of little end = 3.305 lbs.

Length of connecting rod between centres = 310 mm.

Valves and Valve Gear.

The twin inlet and exhaust valves work vertically in cast-iron valve stem guides in the cylinder heads, and are operated by rocker levers mounted on roller bearings, each pair of valves being operated by a single tappet rod from one of the camshafts in the crankcase.

Valves.

The heads of all the valves, both inlet and exhaust, are of the same diameter—i.e., 54 mm., and the angle of the valve seatings is 30 deg. in each case.

The inlet valves are machined concave under the head, and are formed with a 20 mm. radius between the valve stem and the head. The exhaust valves are convex in the head, and are made with a compound radius between the valve stem and the head of 9 and 25 mm. The diameter of all the valve stems is 11 mm., the clearance in the guide bushes being 0.12 mm. (inlet) and 0.15 mm. (exhaust) (cold). The ends of the valve stems are fitted with hardened steel discs, which are bedded in the recessed ends of the stems.

The inlet valves are 136.5 mm. long over-all, whilst the exhaust valves are 152 5 mm. in length. The exhaust valves are made

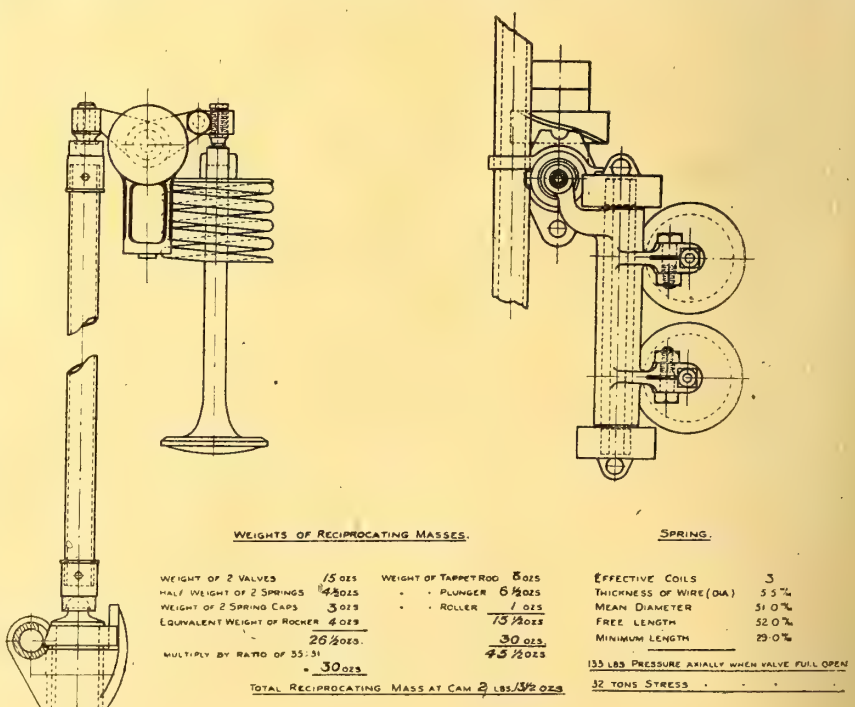
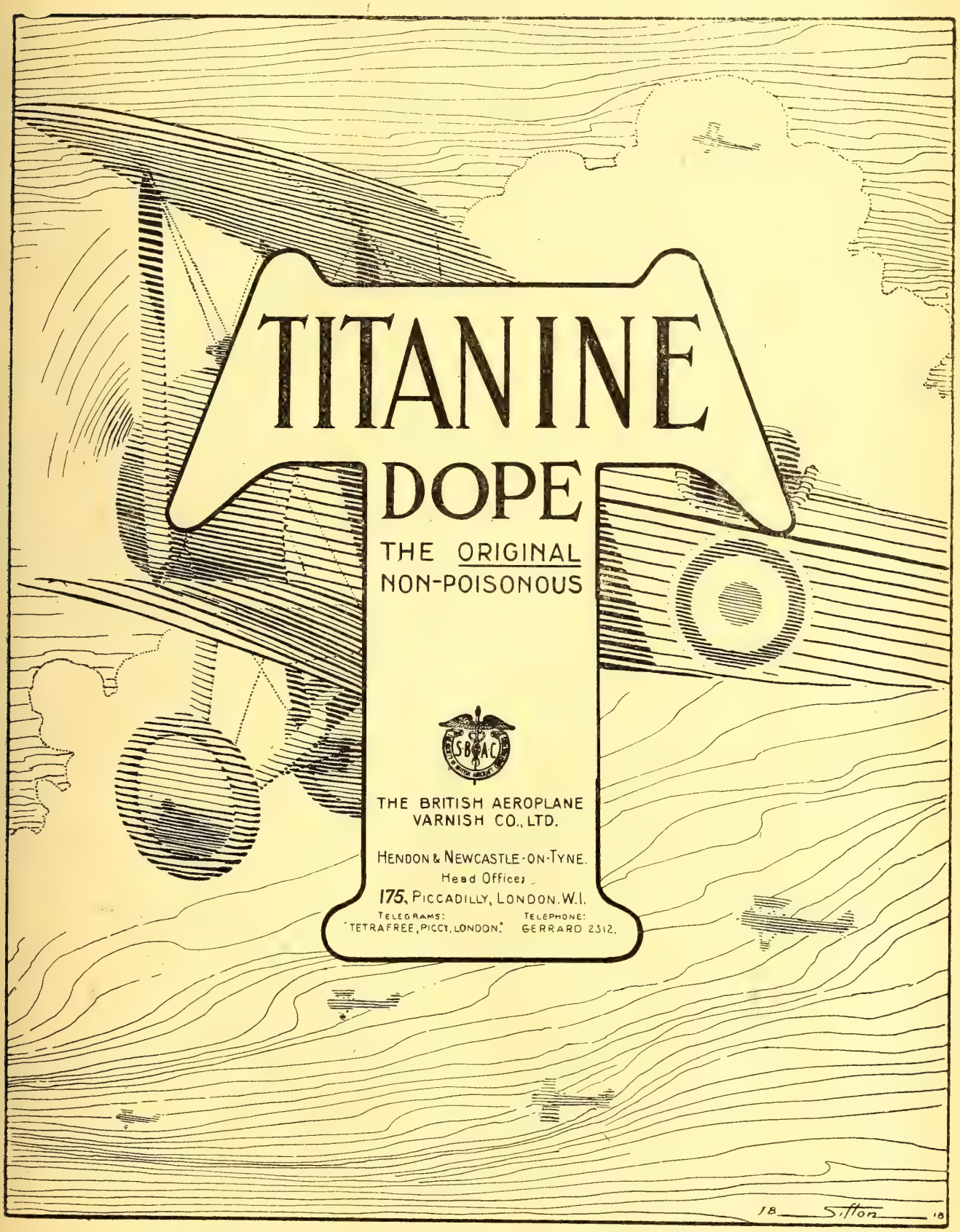
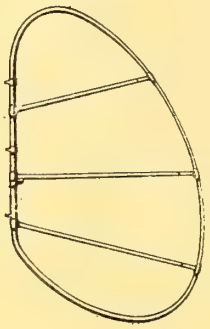


Fig. 13.


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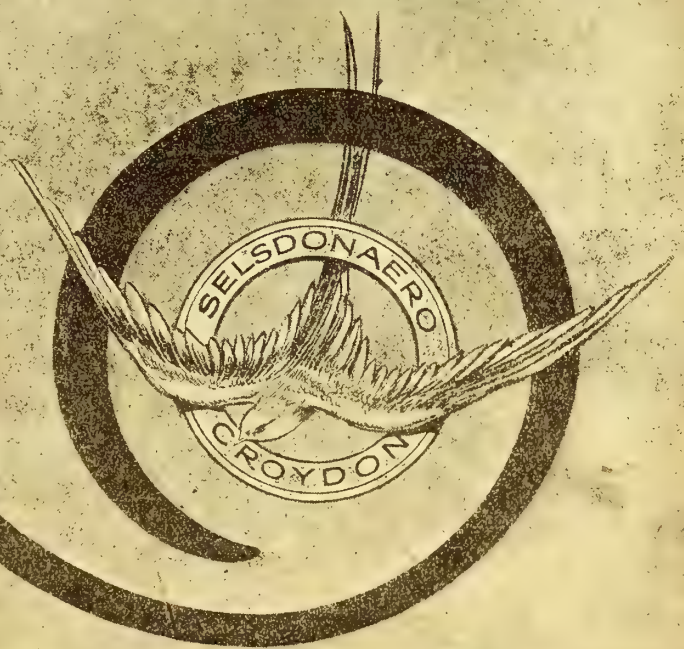
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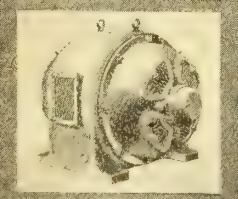




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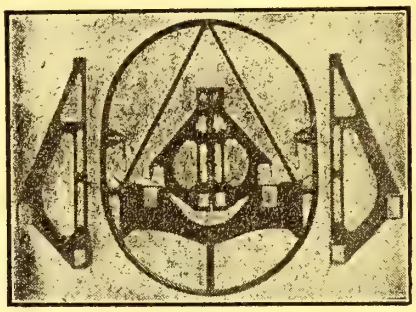
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Mountford, Fredk., Lt., Lifford, Birmingham. "Fremo, Birmingham." King's Norton 261.
Rubery Owen & Co., Darlaston, South Staffs
Sankey, Joseph, & Sons, Ltd, Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston." Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford." Keynsham 21.

Metal Spinnings—
Arnold & Sons, Lawrence Road, Tottenham, N.15.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.
Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham." Central 793.
MacLennan, J., & Co., 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines)

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2 "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London." London Wall 3266-3267.

Pattern Making—
Fredk. Ward, 6, 7 and 8, Allsop Street, Upper Baker Street, W Padd. 4743.

Piston Rings—
British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.
Allen & Simmonds, Ltd., Reading.

Plating, Nickel Silver and Electro Tinning—
Arnold & Sons, Lawrence Road, Tottenham, N.15.

Power Presses and Dies—
Bliss, E. W., & Co., 2a, Pocock Street, Blackfriars Road, London, S.E.1. "Blissdon, London." Hop. 4340.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames. "Ebora, Kingston." Kingston 672
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104.
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." 24214 Leeds
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347
Westland Aircraft, Yeovil. "Aircraft, Yeovil. Yeovil 129

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth Letchworth 26.

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 166

Rubber Tubing & Accessories—
Hancock, James Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Masticator, Isling, London" City 3811 and 3812.

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Inventors, Redditch." Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).
Gosport Aircraft Co., Gosport. "Flight, Gosport" Telephone No. 217.
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Southampton 1337.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds. Leeds 21053.

Searchlights & Landing Lights—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Arnold & Sons, Lawrence Road, Tottenham, N.15.
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London." Vic 4830.
Arnold & Sons, Lawrence Road, Tottenham, N.15.
British Metal (Kingston), Ltd., Kingston-on-Thames. [Staffs
Rubery Owen & Co., Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

BUYERS' GUIDE cont. on next page.



The · Aeroplane ·

Acceptance and Experimental Flights–

The Prodger Isaac Aviation Co "Aeromnia, Piccy, London" Gerrard 278 (2 lines).

Acetylene Welding Plant–

Acetylene Corporation of Great Britain, Ltd, The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London" Vic 4830

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Aeroplane Manufacturers–

Aircraft Manufacturing Co, Ltd, Hendon. "Airmanship, Hyde, London" Kingsbury 220.

Armstrong, Sir W, Whitworth & Co, Ltd., Newcastle - on - Tyne "Armstrong Aviation, Newcastle-on-Tyne." Gosforth 500.

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)

Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich" Norwich 851.

British & Colonial Aeroplane Co., Ltd. (The Bristol Co.), Filton, Bristol. "Aviation, Bristol." Bristol 3066.

British Caudron Co., Ltd., Broadway, Cricklewood, N.W.2. "Caudroplan, Crickle, London." Hampstead 5551.

Central Aircraft Co., High Road, Kilburn, N.W 6. "Aviduction, Phone, London" Hampstead 4403 and 4404.

Davidson Aviation Co., Ltd., Hammersmith, W.6. Hammersmith 1992 (1 lines).

Dawson, John, & Co., Ltd., Newcastle-on-Tyne. "Dependable, Newcastle-on-Tyne." Central 2604 (2 lines).

Eastbourne Aviation Co., Ltd., Eastbourne. "Aircraft, Eastbourne" Eastbourne 1176.

Grahame-White Aviation Co., Ltd., London Aerodrome, Hendon. "Volplane, Hyde, London" Kingsbury 120.

Handley Page, Ltd , 110, Cricklewood Lane, N W.2. "Hydrophid, Crickle, London" Hampstead 7420

Hooper & Co., Ltd., 54, St. James St., Piccadilly, London, S.W. "Sociable, St. James, London" Regent 912

Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).

Martinsyde Ltd., Brooklands, Byfleet, "Martinsyde, Weybridge." Woking 331; Byfleet 171.

National Aircraft Manufacturing Co, Ltd., 15, Drummond Crescent, Seymour Street, Euston. Museum 3373.

"Nieuport" General Aircraft Co., Cricklewood, London, N.W.2. "Nieuscout, Crickle, London" Willesden 2456.

The Regent Carriage Co , Ltd , 126/132, New King's Road, Fulham, S W 6 "Carbodis, London." Putney 2240-2241.

Roe, A. V., & Co., Ltd., Manchester. "Triplane, Manchester" Manchester 8504-8531, Manchester.

Saunders, S. E., Ltd., East Cowes, I.O.W. "Consuta, East Cowes" Cowes 103.

Short Bros , Rochester, Eastchurch and Whitehall House, S W. "Tested, Phone, London." Regent 378.

Sopwith Aviation Co., Ltd., Kingston-on-Thames. "Sopwith, Kingston" Kingston 1088 (8 lines)

Standard Aircraft Manufacturing Co , 28, Bow Common Lane, E East 2823

Tarrant, W. G., Byfleet, Surrey "Tarrant, Byfleet" Byfleet 1, 2 & 3.

Thames Aviation Works, 141, Curtain Rd , E C 2 London Wall 9766.

Vickers, Ltd , Imperial Court, Basil Street, Knightsbridge S W.3 "Vickerfyta, Knights, London" Kensington 6810.

Waring & Gillow, Ltd., Hammersmith. "Warisen, Ox, London" Museum 5000

Westland Aircraft, Yeovil. "Aircraft, Yeovil" Yeovil 120

White, J Samuel, & Co., Ltd., East Cowes. "White, East Cowes" Cowes 3

Whitehead Aircraft (1917), Ltd , Richmond, Surrey "Whitecraft, Richmond, Surrey." Richmond 1780-1

Witton & Witton, 143, Fonthill Road, Finsbury Park, London, N 4 North 2110

Wycombe Aircraft Constructors, Ltd , High Wycombe, Bucks. "Aircraft, High Wycombe." High Wycombe 84

Airships–

Airships, Ltd., High Street, Merton

Short Bros , Rochester, Eastchurch, and Whitehall House, S W Wimbledon 1314. "Tested, 'Phone, London" Regent 378

Aluminium Castings (Sand and Die)

Coan, R. W., 219, Goswell Road, London, E.C.1. "Krankases, Islug, London" City 3946.

Bent Timber Parts–

Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London" Museum 496

Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough" Market Harborough 15

The Atlas Bedstead Company, Bilston "Atlas, Bilston." Phone No 8 and 51.

Bearings (Etonia Cast Phosphor Bronze)

Yorkshire Engineering Supplies, Ltd , Wortley, Leeds. "Yes, Leeds" Central 3927.

Blowpipes (Oxy-Acetylene)–

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London" Vic. 4830.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Vic. 3540 (3 lines).

Books (Aero Engines).

Dykes' Auto Encyclopedia, Gillam Dome Buildings, Richmond, Surrey

Brass Sheets for Tipping Propellers–

Pritt & Co., 46, Fenchurch Street, London, E.C.3 "Poetry, Fen, London." Avenue 995, 906, and 7996.

Buildings–

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey. Wimbledon 1313.

Rubery, Owen, & Co , Darlaston, South Staffs

The Wilfley Co., Ltd , Salisbury House, London Wall, E.C.2. "Wrathless, 'Phone, London." City 2681-2.

Cable Coverings and Cable Controls–

The Bowden Brake Co., Ltd., Tyseley, Birmingham. "Bowden, Acock's Green" Acock's Green 103 & 104.

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Carburettors–

Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2. Victoria 4670.

Casein–

Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C 3. "Suricodon, Fen, London." Avenue 34 and 35

Celluloid (Non-Flam.)–

Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London." Central 1306-7.

Clothing–

Burberry's, Ltd., Haymarket, S.W.1. Regent 2165

Dunhill's, Ltd , Euston Road, N.W.1 "Dunsend, London" North 3405-6.

Coloured Rags–

Joseph, A., Earl Street, London Road Southwark, S.E.1. "New Mongo Sedist, London." Hop 85, 361, 4272.

Component Parts–

Accles & Pollock, Ltd , Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (4 lines).

Central Aircraft Co , High Road, Kilburn, N.W.6 "Aviduction, Phone, London." Hampstead 4403 & 4404.

P.D.W. Aircraft Co., Ltd., Princes Street, Richmond. "Acros, Richmond" Richmond 1681

Thompson Bros (Bilston), Ltd , Bradley, Bilston, England. "Thompson Bros., Bilston" Bilston 10

Cords, Tapes, and Threads–

MacLennan, J., & Co , 10, Newgate Street, E.C.1. And at Glasgow. City 3115.

Dopes–

British Aeroplane Varnish Co., Ltd., 166, Piccadilly, W.1. "Tetrafree, Piccy, London" Gerrard 2312.

British Cellulose Co , 8, Waterloo Place, S.W.1 "Cellutate, London" Regent 4046

The British Emaillite Co , Ltd , 30, Regent Street, S.W.1 "Ridleypen, Piccy, London" Gerrard 280.

Cellon, Ltd., 22, Cork Street, London, W.1. "Ajawb, Reg, London" Gerrard 440.

Engines and Parts–

Allen, W. H., & Co., Ltd., Bedford "Pump, Bedford" Bedford No 1

Arrol-Johnston, Ltd , Dumfries "Mocar, Dumfries" Dumfries 281 282

The Beatty School of Flying, Ltd , The Broadway, Cricklewood, N W 2 Hampstead 3900

Engines and Parts–

Beardmore Aero Eng., Ltd , 112, Great Portland Street, W 1 "Beardmore, London" Gerrard 238

Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W 1 "Aerolight, Vic, London." Vic 7026.

Gordon Watney & Co., Ltd., Weybridge. "Mercédès, Weybridge" Weybridge 550 (7 lines).

Green Engine Co., Ltd , Twickenham. Richmond 1203.

Gwynnes, Ltd., Hammersmith, W. "Gwynne, Hammersmith." Hammersmith 1910.

Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W "Nitrifier, London" Gerrard 8026

Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1654-6-6.

Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton" Wolverhampton 685

The Gnôme & Le Rhône Engine Co , Ltd , 27, Buckingham Gate, S.W 1 "Elevenfold, London." Walthamstow 811 (2 lines).

Electrical Accessories–

Belling & Co., Montagu Road, Upper Edmonton, N.18. "Belling, Edmonton" Tottenham 1084.

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2267; London Wall 1564

Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Eusroad, London." Museum 70

Premier Electric Heaters, Ltd , 258, 259, and 260, Bradford Street, Birmingham "Fahrenheit, Birmingham." Midland 461

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N W 10 "Rodynalite, Phone, London" Willesden 2480

Electric Cables–

E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 48

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2267; London Wall 1564.

Electric Lighting and Power–

Johnson & Phillips, Ltd , Charlton, London, S.E.7. "Juno, London." Central 2267; London Wall 1564.

Mann, Egerton & Co., Ltd , 117, Cleveland Street, London, W. "Installing, Eusroad." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers–

W. Canning & Co , 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines).

Flare Lights–

Imperial Light, Ltd., 123, Victoria Street, London, S.W 1 "Edibrac, 'Phone, London" Victoria 3540 (3 lines).

Flexible Shafts–

Herbert Terry & Sons, Ltd., Redditch "Springs, Redditch" Redditch 61.

Fluxes–

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools–

Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton" Bournemouth 1160

Cambridge School of Flying and Aerodrome Co., 308, St Andrews Street, Cambridge. "Carbon, Cambridge." Cambridge 5 and 1086.

Furniture (Office)–

Cooke's (Finsbury), Ltd , Finsbury Pavement House, London, E C.2. London Wall 573 and 6179.

Galvanising–

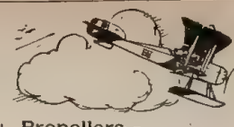
Boulton & Paul, Ltd., Rose Lane, Norwich "Aviation, Norwich." Norwich 851.

Gauges–

J A. Prestwich & Co., Northumberland Park, Tottenham, N.17.

Gears–

Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham. "Mossgear, Birmingham" East 407



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Glue–

Cannon, B , & Co., Ltd., Lincoln London Office, 110, Cannon Street, E C.4. "Beecolin, Cannon, London." City 1206.

Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Wapp, London." Avenue 3178.

Mendine Co., 8, Arthur Street, E.C. Bank 5873.

Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3

Goggles–

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Hack Saw Blades and Machines–

Victor Saw Works, Ltd , 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880

Heating and Ventilating–

Chas. P. Kinnell & Co., Ltd , 65 & 65A, Southwark Street, London, S E 1. "Kinnell, London" Hop 372 (2 lines).

Sturtevant Engineering Co , Ltd , 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).

The Thames Bank (Blackfriars) Iron Co., Ltd , Upper Ground Street, London, S.E.1. "Hot Water, Friars, London." Hop 763.

Hollow Spars–

McGruer Rentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718.

Instruments–

British Wright Co., Ltd., 33, Chancery Lane, W.C.2 Holborn 1308.

Instruments (Scientific, Altimeters, etc.)–

The Cambridge Scientific Instrument Co., Ltd., Cambridge "Instrument, Cambridge." Cambridge 642.

Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17 "Aneroid, Phone, London." Walthamstow 180.

Leather Cloth–

New Pegamoid, Ltd , 334, Queen Victoria Street, London. "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces–

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch" Redditch 61.

Magnetos–

The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1 "Vicksmag, Phone, London" Museum 430.

The British Thomson-Houston Co , Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.

The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry." Coventry 1008-1009.

Metal Manufacturers–

Clifford, Chas , & Sons, Ltd., Birmingham. "Clifford, Birmingham." Central 42-43. Avenue 1432.

Metals in General–

Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.

Samuel Mercer & Co., 198, Upper Thames Street, E C 4 "Reconciled, Cannon, London." City 6342.

Metal Parts and Fittings–

Accles & Pollock, Ltd , Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).

Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4959.

Aircraft Supplies Co , Ltd., Ascot House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).

Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.

Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton" Wolverhampton 1041

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds" Roundhay 345 (3 lines).

British Metal (Kingston), Ltd , Kingston-on-Thames.

Guthrie, J. B , & Son, 30, St. Mary Axe, E.C.3 Avenue 1432

Lombard Rim and Tube Co , Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).

Metal Parts and Fittings–

Mann, Egerton & Co , Ltd , 177, Cleveland Street, London, W.1. "Installing. Eusroad, London." Museum 70.

Mountford, Fredk , Ltd., Lilford, Brumingham. "Fremo, Birmingham" King's Norton 261

Rubery Owen & Co , Darlaston, South Staffs

Sankey, Joseph, & Sons, Ltd , Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.

The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.

The Selsdon Aero & Engineering Co , Ltd , 1, Albemarle Street, Piccadilly, W.1. "Selsero, Phone, London." Regent 1181.

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10 "Rodynalite, Phone, London" Willesden 2480.

Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston." Bilston 10.

Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W 10.

Metal Shearing Tools–

Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford." Keynsham 21.

Metal Spinnings–

Arnold & Sons, Lawrence Road, Tottenham, N.15.

Metric Bolts–

Cashmore Bros , Hildreth Street, Balham, S W Battersea 415.

Rubery Owen & Co., Darlaston, South Staffs

Miscellaneous–

Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast" Belfast 4033-4034-4035.

Bowden Wire, Ltd , Willesden Junction, "Bowrehm, Harles, London" Willesden 2490 (3 lines).

British Metal (Kingston), Ltd., Kingston-on-Thames.

Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.

Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham." Central 793.

MacLennan, J., & Co , 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars–

Arrol Johnston, Ltd., Dumfries "Mocar, Dumfries." Dumfries 281-282.

Mann, Egerton & Co., Ltd , 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.

Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines)

Nameplates and Labels–

British Metal (Kingston), Ltd., Kingston-on-Thames

The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels–

Triplex Safety Glass Co , Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Oils–

C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C 2 "Cheery, Cent, London." Central 11305 and 13466.

Parachutes–

E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London." London Wall 3266-3267.

Pattern Making–

Fredk. Ward, 6, 7 and 8, Allsop Street, Upper Baker Street, W Padd. 4743.

Piston Rings–

British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.

The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.

Allen & Simmonds, Ltd., Reading.

Plating, Nickel Silver and Electro Tinning–

Arnold & Sons, Lawrence Road, Tottenham, N.15

Power Presses and Dies–

Bliss, E. W., & Co., 28, Pocock Street, Blackfriars Road, London, S.E 1. "Blissdon, London" Hop. 4340.

Presswork–

Rubery Owen & Co., Darlaston, South Staffs.

Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61

Propellers–

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)

Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.

Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston." Kingston 672

Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9 Kingsbury 104

Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521

Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines)

Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." 24214 Leeds

Stanley Aviation Co., 67, Kingsland Road, E 2. City 8347

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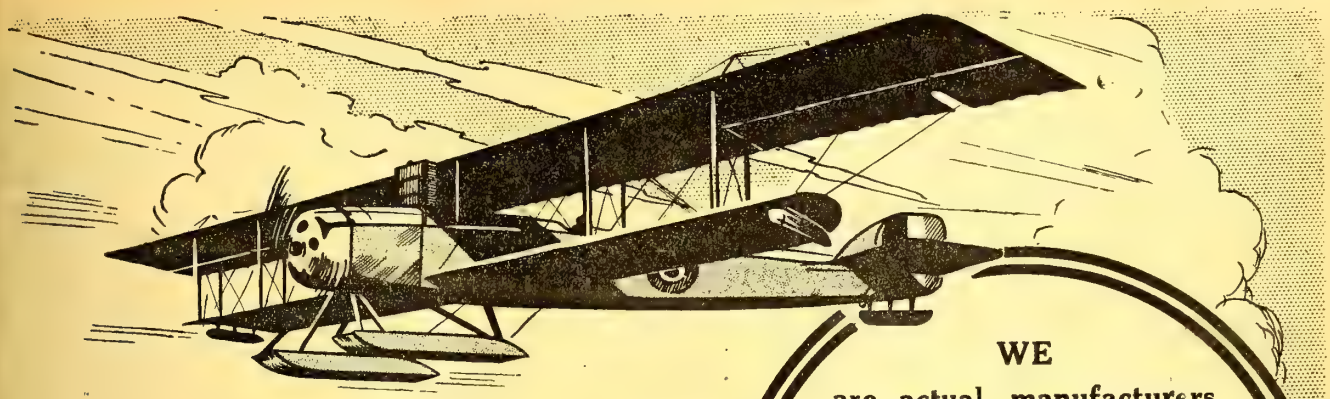
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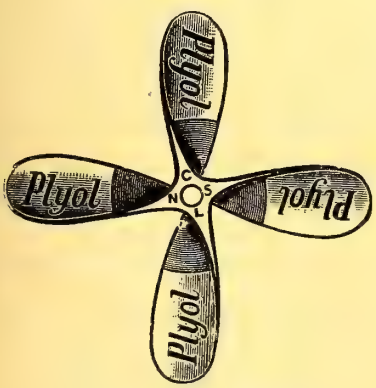
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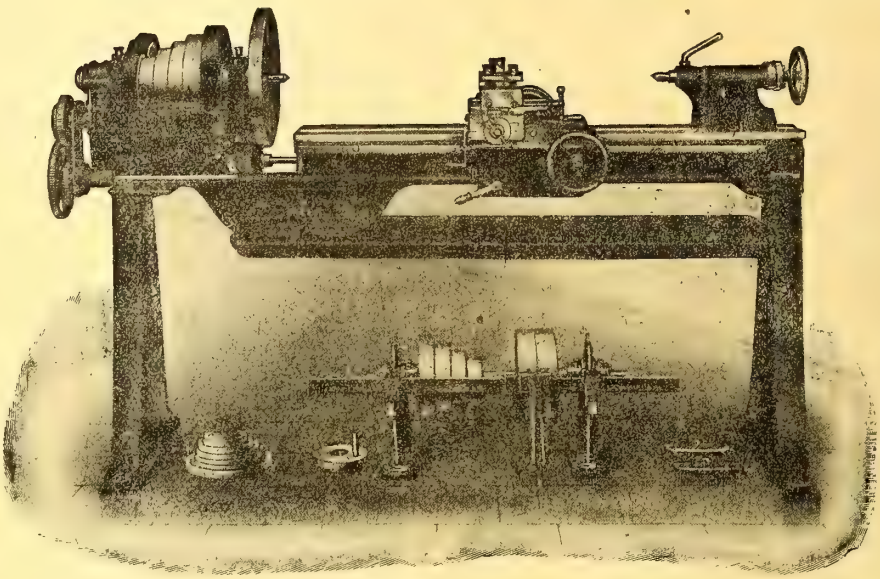
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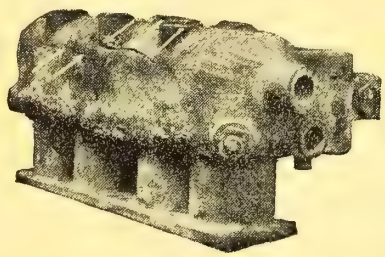
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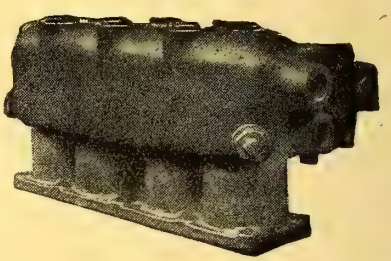
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The photo on the right shows Darracq Cylinders after Barimar had cut away the botcher's work and made new parts as described below.



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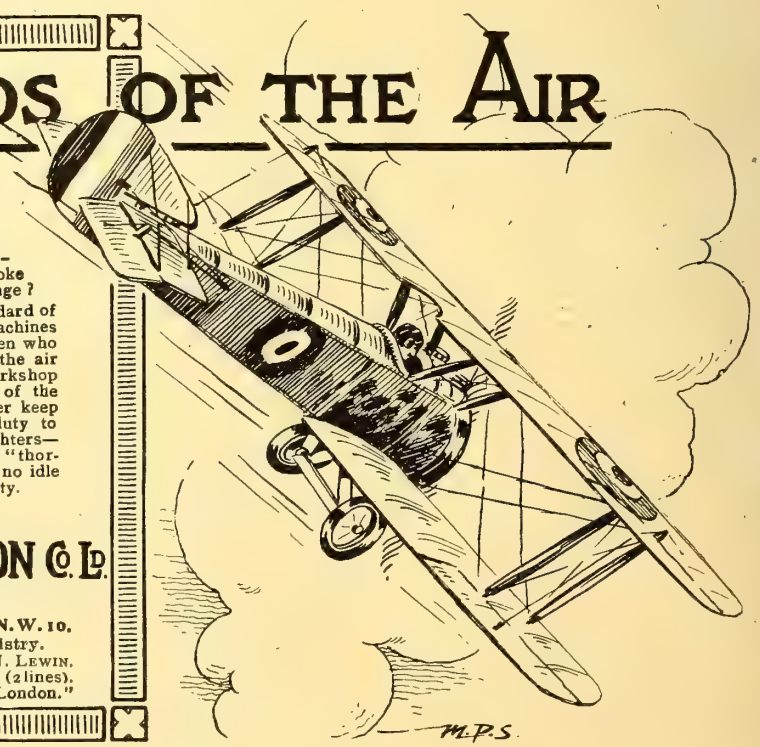
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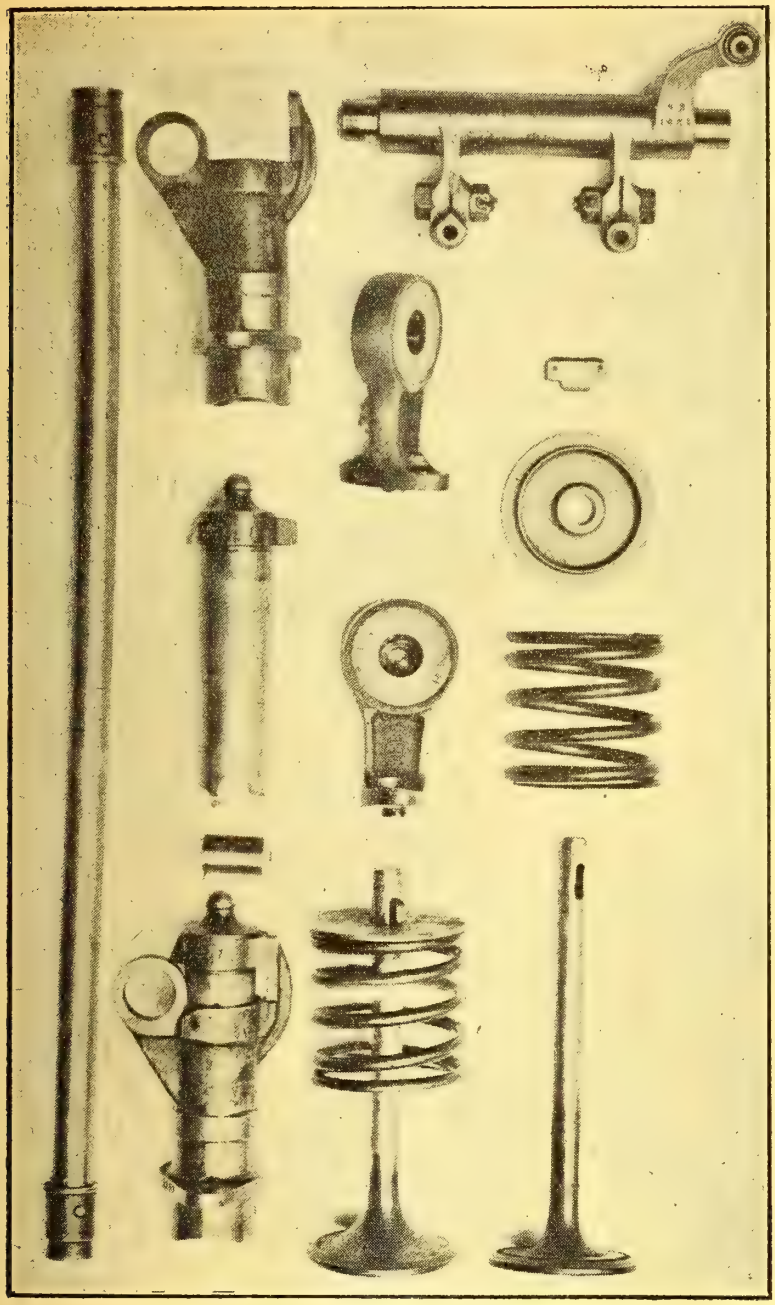


Fig. 14.—Valves and Valve Gear Parts.

longer to allow for the extra water cooling space in the cylinder head above the exhaust valve pocket already referred to.

All the valve springs, however, are of exactly the same length—i.e., 52.5 mm. free, and measure 39.5 mm. when in their position in the cylinder, initially compressed with no valve lift. The diameter of all the valve springs is the same, 51 mm. (cenfral diameter of coils), and the gauge of wire is 5.22 mm. in all cases.

The valve springs are fitted with plain collars at the top. These are secured by T-shaped cotters through the valve stems in the usual way. These are also locked in position with small wire clips, which are fitted to the spring cotters through two small holes. The surface of all the valve spring collars is galvanised or plated with a tin or zinc deposit of some nature, apparently to prevent corrosion. This form of galvanised exterior finish is carried out on several other parts of the engine.

Details of the valves and valve springs are given in Figs. 13, 14 and 15.

Valve Rockers.

The roller bearings carrying the spindles of the valve rockers are mounted in short brackets, each of which is attached to the cylinder heads by two 8 mm. studs and castellated nuts. The bearing brackets are steel drop forgings, and the roller races are, to a certain extent, permanently fixed inside the recessed heads of the brackets, and are covered by thin steel discs fitted over the front faces of the bearings, these being held in position by a form of mechanical knurling largely used in German aero engine manufacture. This mechanical process takes the form of spinning or riveting over the housing metal of the part by a series of accurately spaced indentations. The effect of this work is shown in the photograph of the roller-bearing brackets amongst the valve parts in Fig. 14.

The hardened steel set screws for the adjustment of the tappet clearances are drilled with a 5 mm. hole in the centre portion through the squared end only, and the usual form of transverse locking bolt is provided. The method of splitting the lever to provide for the locking of the tappet adjusting screw, however, is carried out in a somewhat unusual way. This is shown in the view of the rocker lever in Fig. 13, from which it can be seen that the saw-cut is made from the tappet hole, which takes the tappet adjusting screw backwards through the centre of the rocker lever towards the rocker spindle.

A steel stud having a hardened hemispherical end, which makes the top joint of the valve push rod, is fitted on the outer lever of the valve rocker. These steel studs are driven tightly into the levers, and are secured by small steel wire rings, snapped over semi-circular grooves cut in the top ends of the spherically ended studs.

The tappet push rods are made of steel tube 16 mm. outside diameter, and are fitted with hemispherical hardened steel cups at each end; these are fixed to the push rods by taper pins and weigh 0.48 lbs. each.

Hardly any alteration has been made in the familiar tappet design. The tappets consist of hollow steel tappet barrels, which are plugged at the top ends by hardened steel caps; the tops of these caps are formed with hemispherical heads, which engage with the lower ends of the cupped push rods.

The hardened cam rollers are held in position by the grooves machined in the bottom ends of the tappet barrels; these grooves are made slightly more than a semicircle to prevent the roller from falling out. Side movement of the rollers is prevented by the tappet guides. The cam rollers are 15 mm. in diameter, and are bored with a 4.5 mm. hole.

Four small holes are bored radially in the sides of the hollow tappet barrels, which always carry a certain amount of oil, thus providing a very simple, efficient method of lubricating the tappet guides. These are made of gun-metal, and the general design is clearly shown in the cross-sectional drawings and also in Figs. 13 and 14.

A vertical lug is provided on the top of each

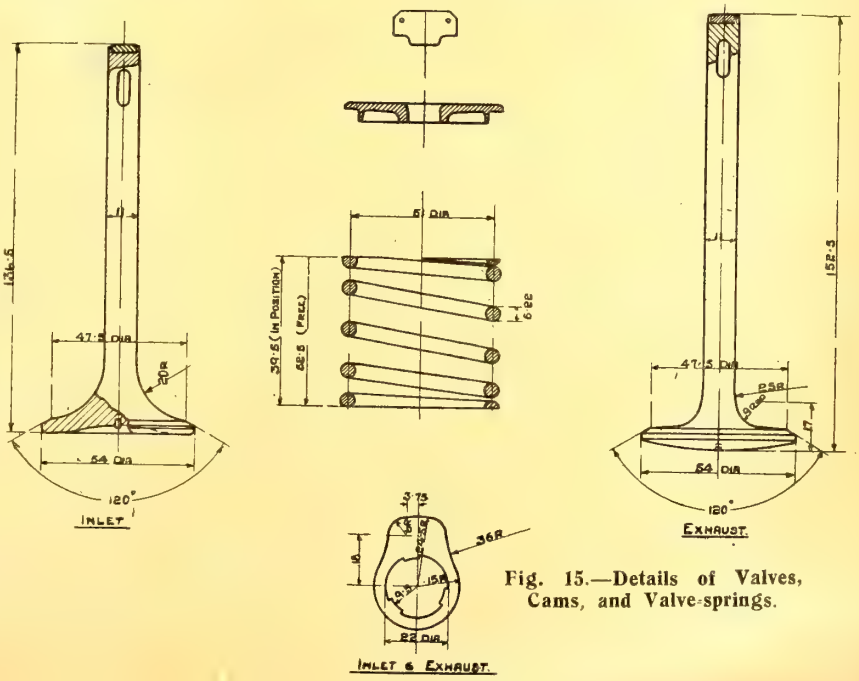


Fig. 15.—Details of Valves, Cams, and Valve-springs.

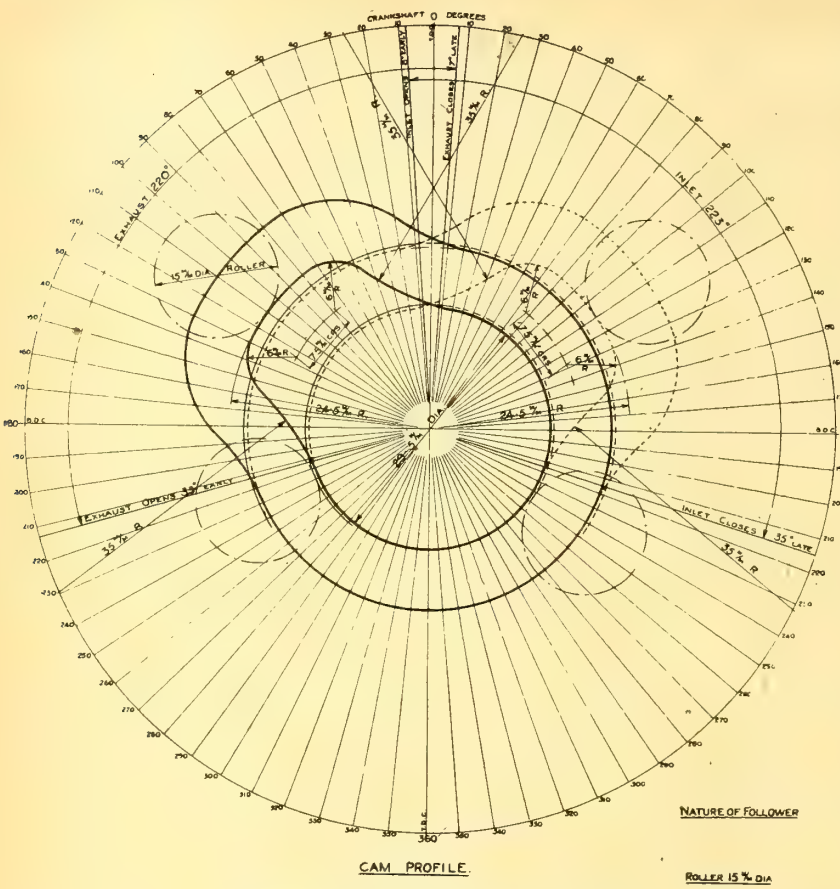


Fig. 16.—Cam diagram and Valve timing.

tappet guide, which forms the guide for the tappet barrel, and prevents it from rotating. Three oil grooves are machined inside the tappet guides.

Cams and Camshafts.

Both the inlet and exhaust cams are of the same profile, although the valve lift is slightly greater for the exhaust valves, according to the valve lift diagram reproduced in Fig. 16a, which has been calculated from the actual valve setting of the engine under test. This difference is due to the unequal tappet clearances. Details of the cam design are given in Fig. 16. The cams are made in pairs, machined from solid forgings. Each pair of inlet or exhaust cams is fitted to the camshaft separately. Each camshaft is provided with three key-ways, which are machined along the whole length of the shaft. The cam blocks are made with three keys cut inside the hole which is bored in the cam blocks, the keys being solid with the cams. The cam blocks are also fixed to the camshaft by taper pins to prevent lateral movement. The central portion of each cam block between each pair of cams is machined to a diameter of 49 mm. × 16 mm. in width. These portions of the cam blocks form the journals of the camshaft bearings. They run in plain phosphor-bronze bushes let into the top half of the crank chamber, and helical oil grooves are cut in the face of the bearing journals on the camshaft. Each cam block is also fixed in position in the camshaft by one 5 mm. set screw, which prevents the cams from moving laterally in the keyways.

The five bronze bushes forming the camshaft bearings are pressed into the crankshaft bearing webs of the crank chamber; the front and rear camshaft bearings are fitted with a flange, and are detachable; they are twice the width of the other three on account of the camshaft driving gears, which are fitted on the front end of the camshafts, and the magneto driving gears, etc., which are fitted to the rear ends of the camshafts.

The setting of the valves is shown in the accompanying diagram (Fig. 16), which shows the following valve positions, viz.:

Inlet valve opens	8°E
Inlet valve closes	35°L
Exhaust valve opens.....	33°E
Exhaust valve closes	7°L
Period of induction	223°
Period of exhaust	220°

Further details of the valve gear and cam design are given in the list of data at the end of this report and in the following diagrams (Figs. 17 and 18) on next pages.

Crankshaft.

Details of the design of the crankshaft are given in the dimensioned drawing in Fig. 21, and a perspective view of the complete crankshaft is shown in Fig. 20. The crankshaft runs in seven plain bearings lined with anti-friction metal of the usual formation. All the journals are 66 mm. in diameter. The diameter of the crankpins is also 66 mm. The crankwebs are all of the same section, being 23 mm. in thickness and 95 mm. in width across the face. All the journals are bored 36 mm. diameter. The crankpins are bored 39 mm. diameter, the ends of the holes being plugged with the centrifugal oil scoops characteristic to the Maybach engines. (Details of these are dealt with later in the notes on lubrication.) The rear end of the crankshaft carries the extension shaft, on which is mounted the wireless dynamo driving pulley, which embodies a friction clutch. This design of wireless pulley is a standard German engine fitting; full details of its design and construction have already been issued in previous reports.

The extension shaft referred to above is a driving fit in the rear end of the crankshaft, which is bored 42 mm.; the extension shaft is locked by a 7 mm. taper pin. Two centrifugal oil-thrower rings are machined on the extension shaft. These details shown in the general arrangement of the engine in Fig. 32.

The main driving bevel gear is fixed to the rear end of the crankshaft by a key 8 mm. wide × 5.5 mm. deep, half sunk in the shaft.

An interesting point in the design of the crankshaft is found in the method of fixing the flange to which the airscrew hub is bolted. The construction is clearly shown in the sectional arrangement of the airscrew hub in Fig. 22, from which it will be seen that a slight taper, 1 in 33.3 mm., is machined on the front end of the crankshaft, on to which the airscrew hub flange is very tightly driven. No key is fitted to the taper, but a grub screw 10 mm. diameter is screwed into the front end of the flange, the hole being drilled half in the flange and half in the crankshaft.

The grub screw is locked by the flanged head of a large plug 40 mm. diameter, which is screwed into the hollow front end of the crankshaft. This flange, to which the airscrew hub is secured by eight 14 mm. bolts with countersunk heads, is mounted on a large single race ball-bearing, 132 mm. outside diameter, behind which is fitted the double thrust ball race, 108 mm. diameter on the ball centre diameter.

On the front portion of this airscrew hub carrying flange is mounted a double oil-thrower ring, which is driven on to the outer diameter of a split collar or bush as shown in Fig. 22.

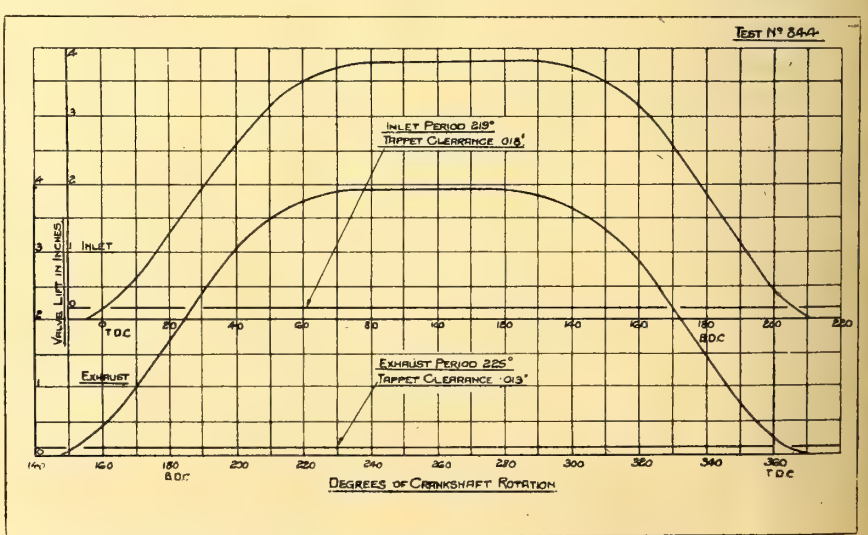


Fig. 16a —Diagram of Valve Lift, R.A.E. Engine Tests.

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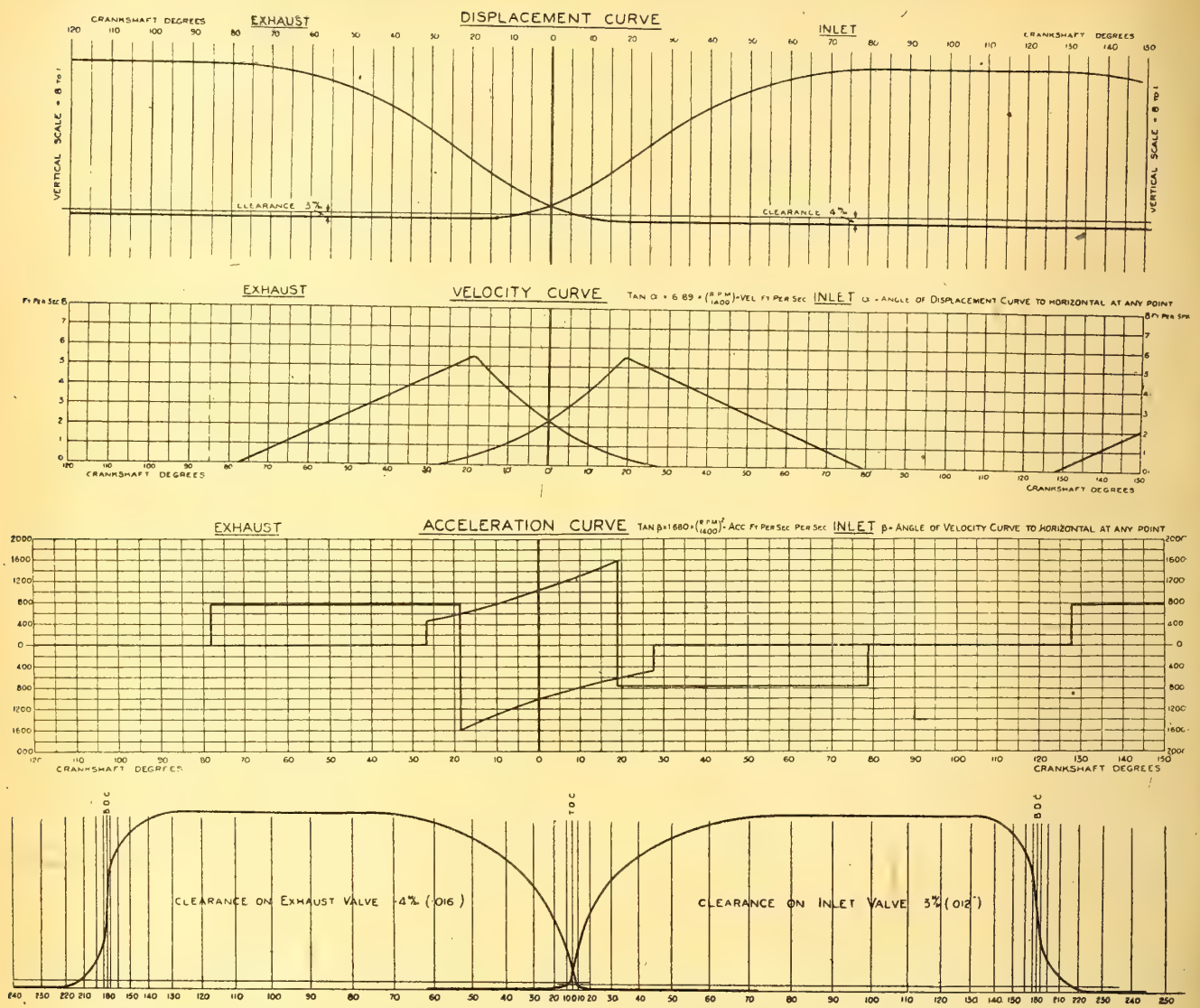
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Figures 17, 18, and 19.

The driving gear for the camshafts is machined on this airscrew hub flange; the teeth of the gear are integral with the flange, hence the splitting of the bush which carries the double oil-thrower rings.

Airscrew Hub.

The general details of the construction of the airscrew hub are given in Fig. 22. Eight 15 mm. bolts are used to bolt the front flange to the two rear airscrew hub flanges, and the airscrew is secured by castellated nuts in the usual manner. The surface of the airscrew hub and flanges is galvanised with deposited tin to prevent corrosion. The front flange floats on the airscrew hub in four castellations, 17 mm. wide × 3 mm. deep. The total weight of the complete airscrew hub, with all bolts, less extension flange on end of crankshaft = 21 lbs.

Crank Chamber.

The photographs, Figs. 23 and 24, show clearly in perspective the general formation of the cast aluminium base chamber. Unlike most of the enemy aero engines, the bottom halves of the crankshaft main bearings are bolted to the top half of the crank chamber. These are very deep in section, and are secured to the crank chamber by 19 mm. diameter bolts, which pass through the crank chamber, and are also used to bolt down the cylinders by means of triangular clamps, now almost standard practice. Flanges are machined at the top end of the holding-down bolts, which are let into recesses cut in the top face of the crankcase. The front main bearing cap also carries below the intermediate gear pinion for driving the oil pumps as shown in the general arrangement of the engine. Cast aluminium covers are bolted to the front and rear ends of the crankcase for enclosing the camshaft driving gears at the front end, and for the magneto and interrupter gears at the rear end of the engine. Further details of the crankcase construction are shown in the illustrations. For an account of the various oil ways drilled in the crankcase casting, see notes on lubrication in the concluding section of the Report to appear next week.

Base Chamber.

The general construction of the lower half of the crank chamber is shown in Figs. 8 and 25, and also in the sectional general arrangement

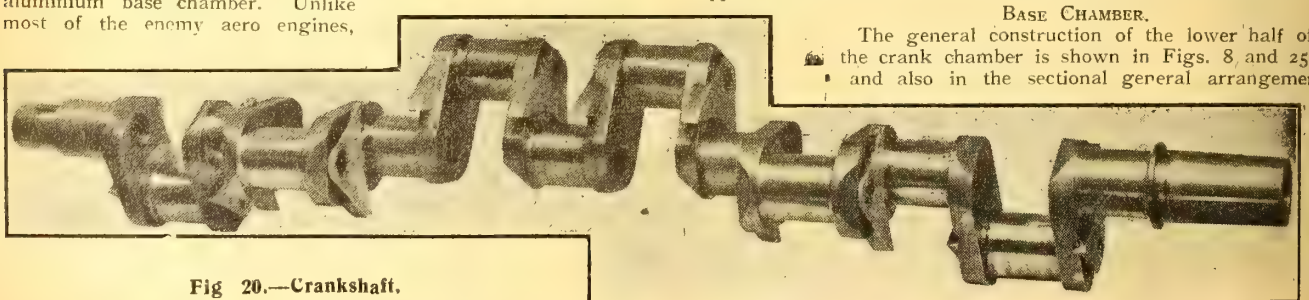


Fig 20.—Crankshaft.



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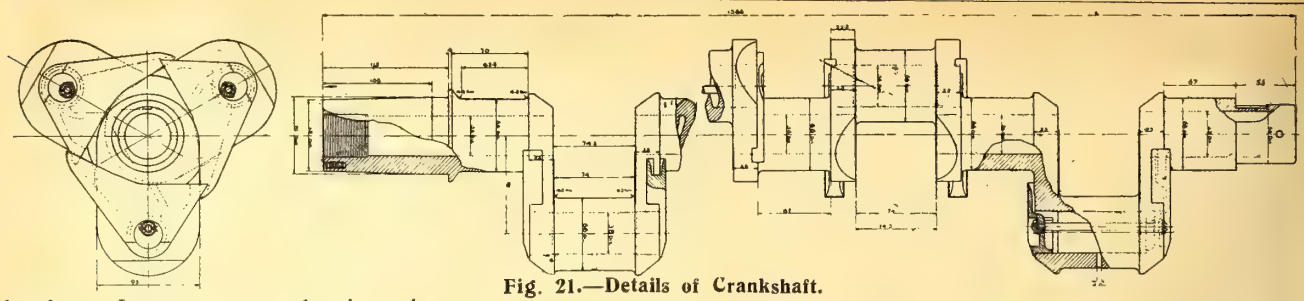


Fig. 21.—Details of Crankshaft.

drawing. It presents several points of interesting design, and is of simple construction, weighing 41.32 lbs. bare. At the rear end of the flange, which is bolted to the top half of the crank chamber in the usual way, extended brackets are cast for taking the two magnetos, and, as will be seen in Fig. 25, the three gear type oil pumps are situated on seatings cast on the bottom of the inside of the base chamber.

The small detachable oil sumps are fixed to flanges cast on the underside of the base, one at each end.

Details of the construction of the oil pumps and detachable oil sumps are given in the notes on lubrication.

Crankcase Ventilation.

As in the Zeppelin-Maybach engines, the efficient ventilation of the crankcase has received careful consideration. The design is, in fact, very similar in both types of engine. On the induction side of the engine six breathers are fitted; these are constructed of fairly coarse brass wire-

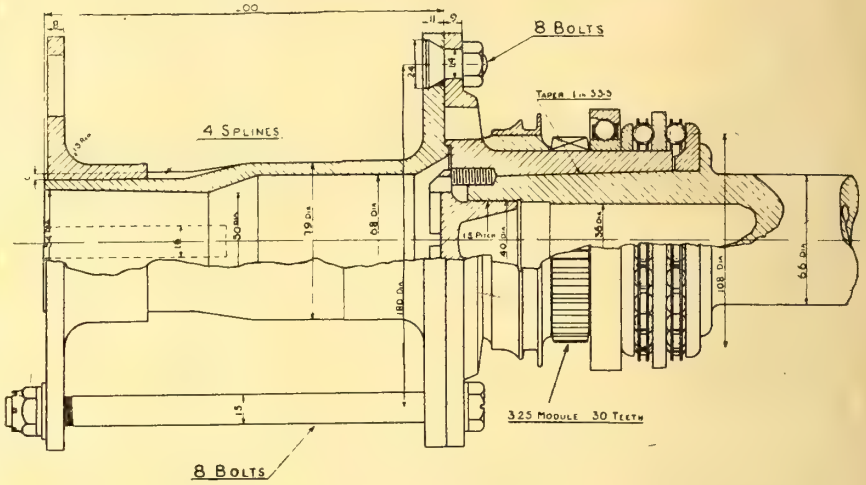


Fig. 22.—Details of Airscrew Hub and Thrust Race.

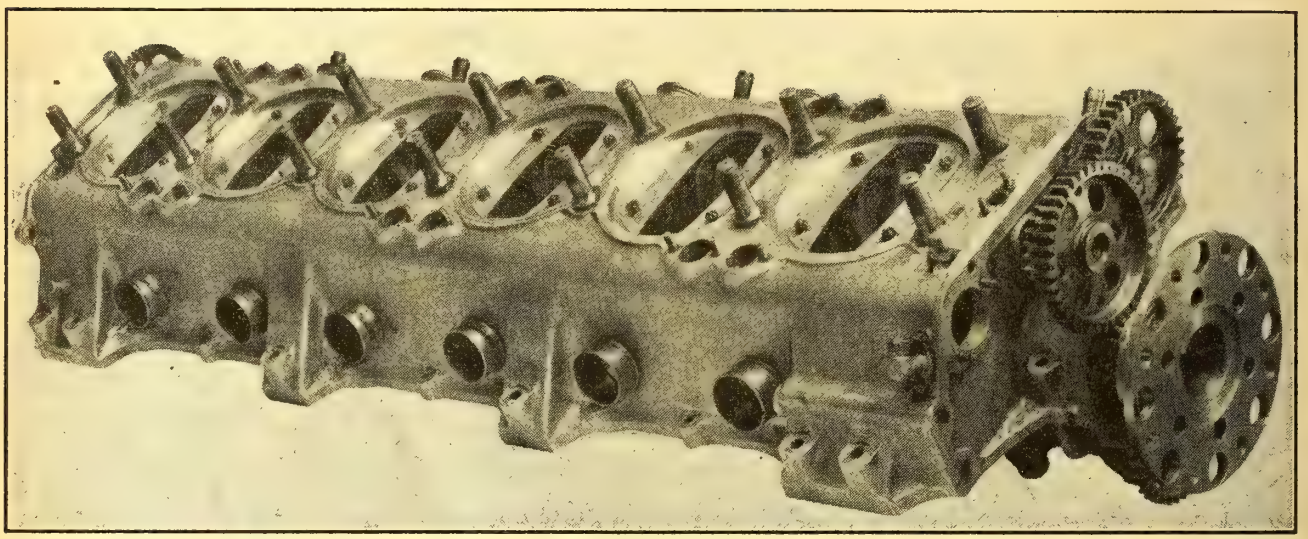


Fig. 23.—Top half of Crankcase.

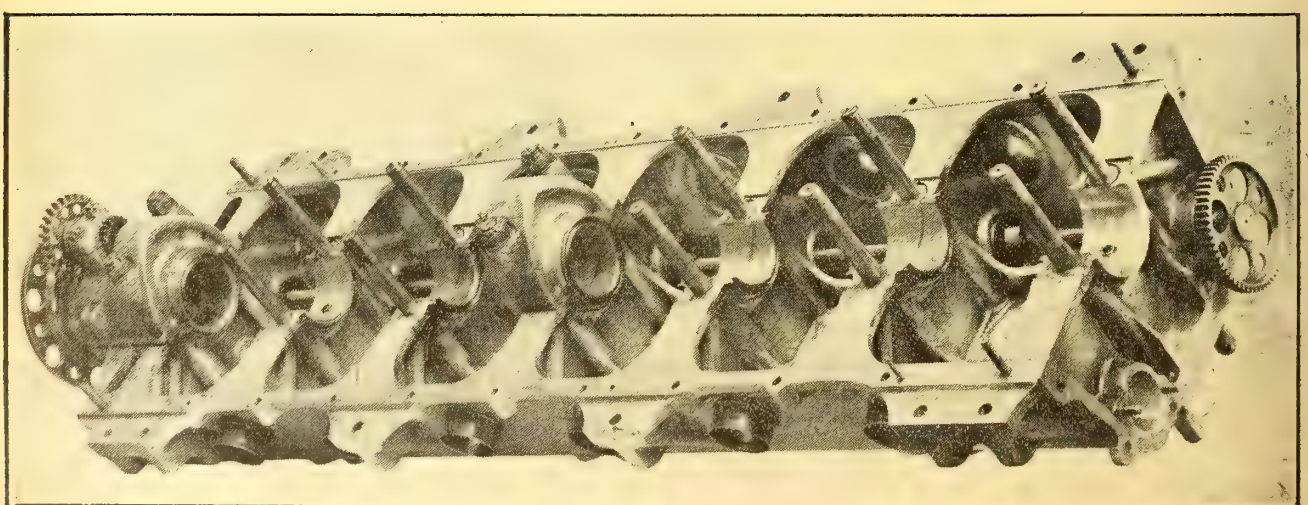


Fig. 24.—Inside view of Crankcase, top half, shown upside down.



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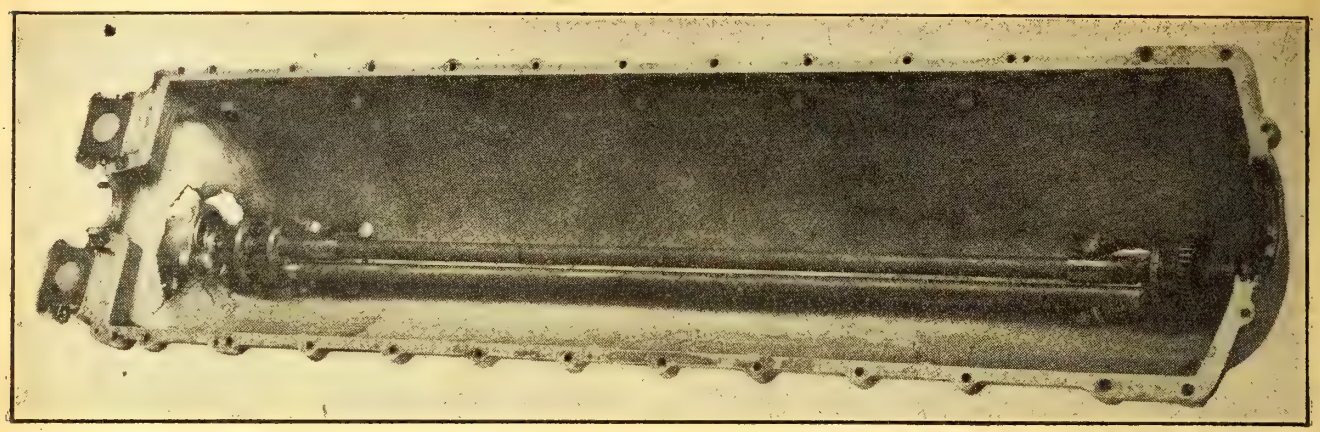


Fig. 25.—View of Base Chamber, showing oil pumps.

gauge baffles mounted in sheet aluminium breathers which are attached to short steel tubular connecting lugs screwed into the crankcase, and are fixed in position by steel wire clips. Details of the construction of these breathers is shown in the sketch, Fig. 26.

On the exhaust side of the engine a peculiar type of ventilator is fitted. This consists of a sheet aluminium manifold, which is connected by six short rubber joints to the crank chamber. The top portion of the ventilator manifold is so made as to form an oil trap for the condensed vapour. This consists of an elliptical section pipe, which leads from the top of the chamber formed in the ventilator manifold to a cowl which projects backward from the outside of the engine cowling in the machine.

This crankcase ventilator is shown in the photograph of the engine (Fig. 2.)

(*To be continued.*)

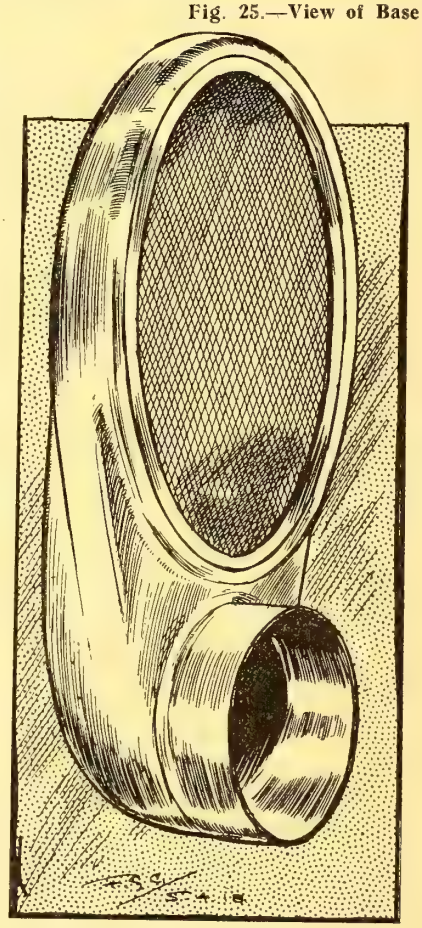


Fig. 26.—Crankcase breather.

THE BRISTOL COMPANY'S CARNIVAL.

A very interesting carnival was held by the employees of the British and Colonial Aeroplane Co., Ltd., at the Zoological Gardens, Clifton, Bristol, on Aug. 10th, under the auspices of the Entertainments Committee of which Mr. H. J. Thomas, the works manager, is chairman. The proceedings opened at 3.0 p.m. with a series of sports arranged by the Sports Club. These events, with the exception of the tug-of-war items, were mainly arranged with a view to providing amusement for the 350 wounded soldiers who were the guests of the employees for the afternoon.

Great amusement was caused by a series of pillow fights over water in which two of the women workers were brave enough to take part. The tug-of-war items testified to a hearty rivalry between the various departments, and was won by the Saw Mills. The women's tug-of-war was won by the Trimming Dept., "A" Team, after a very hard fight.

During the interval the guests sat down to a very nice tea, and afterwards, in reply to a vote of thanks, the treasurer of the Entertainments Committee, Mr. H. Furnival, expressed the pleasure felt by the employees at being able to provide a little amusement for the "Boys in Blue."

Music was provided by the Company's orchestra under the direction of Mr. A. Pratt, and gained for them well deserved applause. This was followed by a concert given by the Company's Male Voice Choir, conducted by Mr. H. Livesay, and this also met with well-merited success. Following this an entertainment was given by the Company's Concert Party, who in black Pierrot costumes came as a pleasant surprise to many of the employees. It was their first public appearance, and although it was known throughout the works that they were rehearsing, it was not known that they had reached such a state of perfection. Altogether the talent shown was a credit to the works and speaks well for the enthusiasm of those employees who provided such a fine entertainment.

Mr. Samuel White, J.P., the Chairman of the Bristol Co., had consented to distribute the prizes, but at the last moment a message was received stating that both he and Sir Stanley White, Bart., were prevented from coming, so the prizes were presented by Mr. E. Temple Robins.

The orchestra finished off the programme by a selection of dance music which was greatly appreciated. The weather was perfect, the attendance great, and everybody appeared thoroughly to enjoy the day. The proceeds are devoted to the fund which is permanently kept open for the regular entertainment of the "Boys in Blue."

It is hoped during the coming winter that the Orchestra, Male Voice Choir and Concert Party will do much to help brighten the lives of our wounded soldiers.

Below is given the results of the Sports events, for which numerous entries were received:—

Tug of War (Women).—Winners, Trimming Dept. "A" Team. (Men).—Winners, Saw Mills.

Obstacle Race.—1, Miss Emery; 2, Miss Rhoades; 3, Miss Sykes.

Sack Race.—1, B. Dyer; 2, S. Middle; 3, — Tilley.

Veterans' Race.—1, J. Watts; 2, W. Milsom; 3. — Baker.

Threadneedle Race.—1, Miss M. Rhoades; 2, Miss E. Langley; 3, Miss E. Emery.

Pillow Fight (Women).—Miss Caie. (Men).—N. Austin.

IRON AND STEEL SCRAP ORDER.

The Minister of Munitions has issued an Order, dated Aug. 20th, providing that every person owning iron or steel scrap (whether metal, machinery, plant or constructional steel or iron work) shall sell and transfer such scrap whenever required by the Controller, and that the Controller's decision as to what is scrap shall be final. The Order further provides that if any such requirement to sell is not complied with within thirty days the Controller may sell or transfer the scrap, the owners in that event receiving the price realised less cost of sale. Owners are to give all reasonable facilities for removal of material, and make such returns as may be required.

All applications under this Order should be made to the Controller of Salvage and Stores, Ministry of Munitions, Whitehall Place, S.W.1, and marked "Iron and Steel Scrap."

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Buyers who desire to purchase, for aircraft use, reliable varnishes and enamels are recommended to apply to Jenson and Nicholls, Ltd., Stratford, London, E.15, for a copy of their catalogue of varnishes, trapannes and enamels.

This firm manufactures many compositions requisite for aircraft construction, including Copal varnish for finishing airscrews and for finishing other exposed work; dope resisting paint, wood fillers, spirit varnish, quick drying black enamel for touching up metal parts, pigmented covering varnish for wings, identification enamels, and other preparations. Briefly speaking, there seems to be no department in aviation for which the firm cannot supply the necessary materials.

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THE AIRCRAFT TRADER

MARKET TOPICS.

Prices are for quantities on usual terms.

COPPER.—The output figures for the first six months of 1918 have turned out very unsatisfactory, and the margin between consumption and output is nearly on the wrong side. This may explain why the U.S. authorities suddenly decided on July 2nd to advance the prices to 26 c.; in any case the additional 2½ c. should be an incentive for producers to speed up production. There does not appear to be any fear of the refineries getting congested, large extensions having been carried through during the past few months.

TIN.—The unsatisfactory condition of this market continues, and it is impossible to forecast what is likely to happen. The available supplies appear to be totally inadequate to meet the present demand. No steps have apparently been taken to control prices in the East, although consumers are very backward indeed, and are undoubtedly expecting the authorities to settle this very difficult problem. It is certainly time something was done to put an end to the unscrupulous speculation which has been rampant. Supplies here are very unsatisfactory, and stocks are very small indeed. Prices have declined considerably during the past 14 days, having fallen from £399 to £381; but buyers are very cautious for the reason stated previously.

COMPARATIVE PRICES.

To-day, 21st	£382	0	0	per ton.
Aug. 14th	385	0	0	per ton.
Aug. 7th	399	0	0	per ton.
Last month	372	0	0	per ton.
Highest price, 1917	309	0	0	per ton.

LEAD.—Supplies of Lead for war work continue satisfactory, but future supplies appear to be doubtful, and there is a slight possibility of the situation becoming tighter.

STEEL.—Supplies of all classes of Steels continue favourable. There is, however, a possibility that the output will be seriously hindered owing to the shortage of fuel. A month ago consumers were congratulating themselves on the satisfactory supplies of Steel which were being received. This happy state of affairs is now, however, seriously threatened; this only goes to prove that even when there is an apparent glut in any material, under war conditions, the wisest policy is to "keep stocks well up" and "look well ahead." Prices are unchanged.

TIMBER.—Supplies of Aeroplane Timber show signs of slight improvement, although very little Mahogany has been received lately. Some large shipments of Spruce have been received recently. No order has yet been issued controlling Hardwoods or Plywood. Supplies of the latter are quite satisfactory.

THE MONTHLY MARKET PRICE LIST.

AUG. 22nd.

The prices given below are the prices ruling on the above date.

TERMS.—Usual for the various materials mentioned.

Prices must not be taken as specific quotations for definite quantities delivered to any part of the country.

ALUMINIUM.

Ingot	£225 per ton *
Remelted	£210 per ton.*

BRASS.

Sheets	16⅛d. per lb.
Strip	15⅛d. per lb.
Wire	15⅝d. per lb.
Tubes	17¼d. per lb.
Castings	16d. to 18d. per lb.
Turning Rod	14¼d. per lb.
Brazed Tubes	19½d. per lb.

COPPER.

Ingot, Standard, Cash	£122 10s. per ton.*
Ingot, Standard, 3 mos.	£122 10s. per ton.*
Best Selected (net)	£135 to £131 per ton.
Sheets	£161 per ton.
Wire	17½d per lb.

FABRIC.*

Linen, R.A.F., 17C, Spec., 36 in. wide, 3s. 1d. p. yd.
Linen, R.A.F., 17C, Spec., 38 in. wide, 3s. 3d. p. yd.
Linen, R.A.F. 17C, Spec., 42 in. wide, 3s. 7d. p. yd.
Spaced, R.A.F., 17C, Spec., 37½ in. wide, 2s. 1d. p. yd.

GUN METAL.

Castings, Plain ..... 1s. 9d. to 2s. per lb.

LEAD.*

Virgin Pig	£29 per ton, c.i.f. net.
Virgin Pig	£30 per ton, ex stores net.
Sheets	£41 per ton, D/d. net.
Pipes	£41 10s. per ton net.
Dry White	£51 per ton, less 5 per cent.
White in Oil	£58 per ton. (lots over 5 cwt. less 5 per cent.)
Red in Oil	£42 per ton, less 2½ per cent. (lots under 5 cwt. less 5 per cent.)
Red in Oil	£42 per ton, less 2½ per cent.

NICKEL.

Nickel ..... £225 per ton.

PHOSPHOR BRONZE.

Ingots, 5 cwt. and under ..... £166 to £196 per ton. (Subject to Copper and Tin Fluctuations.)
Castings ..... 1s. 9d. to 2s 2d. per lb.

PHOSPHOR COPPER.

Ton lots ..... £200 to £205 per ton.

STEEL.

High Speed, 14 p. cent., Tungsten, 3s. 8d. p. lb., basis.*†
High Speed, 18 p. cent., Tungsten, 4s. 5d. p. lb., basis.

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Specification No. S14	£43
Specification No. S15	£70
Specification No. S16	£70
Specification No. S17	£75
Specification No. S18 (oil-hardened)	£86
Specification No. K1	£75
Specification No. K2	£75
Specification No. K3	£86

The above prices are for ¼ in. to 5/16 in. only, other sizes are proportionate.

HEXAGONS.

	.455 and .525	.601 and .710.
Specification S2	£79	£77
Specification S8	£79	£77
Specification S2 (bright-drawn),	£112	£112
Specification S8 (bright-drawn),	£112	£112

SPELTER.

English f.o.b., Birmingham ..... £54-£50

TIN.

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Tinplate ..... 33s. 7½d., basis, f.o.t.*

TIMBER.†

	Official.
Silver Spruce	10s. 4d. c.f.
*English Ash (selected logs)	7s. 6d. c.f., f.o.r.
English Ash (selected lengths and thicknesses of plank)	10s. 6d. c.f., f.o.r.
Mahogany	1s. 10d. to 2s. 0d.
Walnut	2s. 0d. to 2s. 3d.

*For further details see Home-Grown Timber Prices Order, 1917.

ZINC.

Zinc Sheets (American)..... £100, f.o.b., New York.

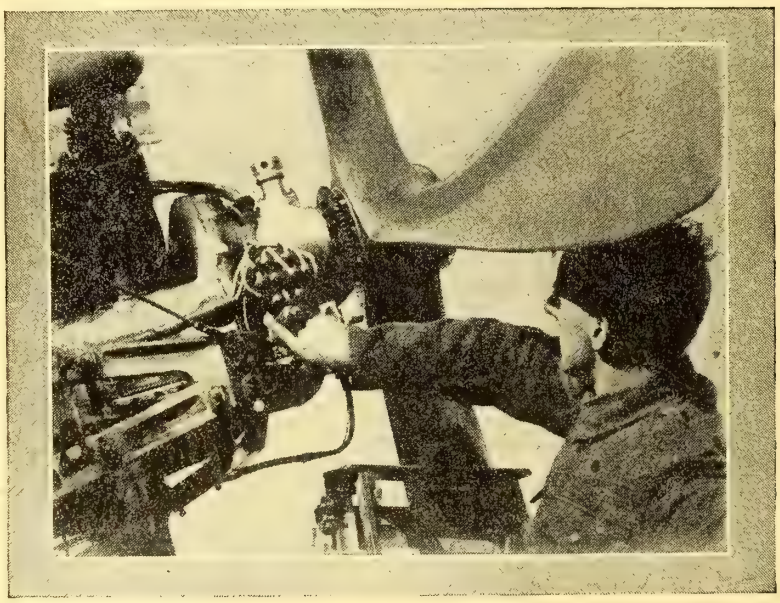
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COMMERCIAL AERONAUTICS

AERIAL WEEK-ENDS.

By "Medway."

I wonder who will be the first hotel proprietor to realise fully the possibilities of the aeroplane as a means of stimulating week-end business and increasing the effective length of his season?

In the very early days of the motor-car a certain number of hotels laid themselves out to cater for the motorist, providing garage accommodation and keeping a small staff of mechanics for repair and overhaul work. In certain instances, at least, this enterprise brought very substantial reward.

There are in existence to-day some very prosperous hotels, the business of which has been built up almost entirely with the help of the motoring connection. In such matters habit is a very powerful factor, and so also is fashion. The early motorist contracted the habit of going to certain places where he knew that he and his car would be well looked after.

The habit has persisted long after its original justification ceased to possess its original force. People who took to motoring at a later date inclined to follow the lead of the pioneers, and so certain hotels which were early to appreciate the possibilities became recognised week-end resorts of the motoring community. Their names, unknown twenty years ago, are now universally recognised, and could, in fact, be used as a sufficient address without any mention of the town or district in which they are situated.

History Repeats Itself.

Something of the sort is bound to recur very soon after the termination of the war, but with the aeroplane instead of the motor-car acting as the means of creating goodwill, and bringing profitable business.

If hotel proprietors in this country are to keep their end up in coming developments they will have to work hard, because they will be in direct competition with those who are out to increase and develop the attractions of foreign watering places and health resorts. One would imagine that, given sufficient enterprise, the Welsh coast and that of Devon and Cornwall will afford many opportunities of building up new businesses of the kind indicated.

It is not the hotel proprietors in the larger seaside towns who will have the best opportunity, but rather those who can dispose, without undue expense, of a sufficient and convenient space to use as a landing ground, and to equip with sheds and the other appurtenances of a satisfactory aerodrome. In some cases there would be no great difficulty in making suitable arrangements also for aeroplanes designed to alight upon water rather than upon ground. Probably, however, the week-end aeroplane will be fitted for both purposes, and will be designed to rise from and alight upon either land or water with equal facility.

Combined Enterprise.

One could, easily enough, name districts that have not as yet developed far enough to justify the erection of really big first-class hotels, but which could be developed very easily and quickly up to this point if suitable landing grounds for aeroplanes were provided. The business might, perhaps, be combined with a sort of job-mastering concern, so that intending visitors not possessing aeroplanes of their own could be picked up in the neighbourhood of London, and other big cities, and taken down to the week-end resort at an agreed fee.

The real difficulty in this direction would lie mainly in the fact that there would be no obvious occupation for the aeroplanes during the regular working days of the week. For some time to come it is to be expected that there will be more pleasure trips than business trips taken by air.

For instance, if a regular service between London and Paris is started, one would suppose that the biggest business will be done round about the week-end. Consequently in the development we are considering, the charges made for accommodation, inclusive of the journey by air, would have to be somewhat higher than would otherwise be necessary.

Doubtless, however, the pilots engaged for such work will also be practical mechanics, and will combine the duties of taking their week-end parties with those of overhauling and tuning up the mechanism of the aeroplanes upon their idle days.

Class Custom.

It may perhaps occur to the reader that an hotel laying itself out to capture this class of business might quite conceivably pass through a period during which the behaviour of its guests would be not exactly sedate. The likelihood of this hits both ways. It would certainly tend to keep away one class of custom, but it would encourage another, and even those who had no fancy for travelling by air would at any rate know where they could have a thoroughly cheerful, if rather rowdy, time.

The management would need tact and a judicious balance between undue interference with the freedom of its guests, and undue lack of control, which might ultimately get the place a thoroughly bad name. It is to be hoped, however, that those who have sufficient enterprise to begin first will also have sufficient sense to know where to stop.

How to Set About it.

My own idea of the right way of handling the business would be to take an ample amount of land in some really attractive position, preferably upon the coast, to provide a landing ground, and also to select a position suitable for a seaplane station.

The next step would be to erect the hotel, or provide for its enlargement. I think at the same time it would pay very well to develop part of the estate as a kind of bungalow town with nicely planned cottages to be let furnished by the week, or preferably by the season.

London, Birmingham, and other big cities have always been at a disadvantage through not being within comfortable reach of really attractive seaside places. So long as one is dependent on railway connection, the tendency is to develop a few places too much and others not at all, because express services can only be run to the few.

It is over early as yet to try and go into full detail of any such scheme as that suggested, but I take it that a man with enough enterprise to work the thing out would undoubtedly utilise a part of the land to be developed for sporting purposes, and would certainly not forget to cater for the golfer.

THE AMERICAN AEROPLANE MAIL.

The "Daily Express" correspondent, writing from New York, says:—

The United States Post Office Department announces, in the first statement of its kind ever issued, that postal aeroplanes are being operated between Washington, Philadelphia, and New York at a cost of approximately only 2s. a mile.

The calculation of operating cost includes departmental overhead charges, interest on investment, replacement of parts, dead-head time of mechanics, petrol, lubricating oils, office force, motor-cycles and trucks, rent, fuel, light and telephone, pay of pilots, hangar men, and mechanics.

Nine machines, says the statement, travelled 7,234 miles at a cost estimated at about £736 8s. The total consumption of petrol, representing 113 hours and eight minutes of flying, was 1,377 gallons.

A Curtiss aeroplane of the army training type showed the lowest cost, about 1s. 9¾d. a mile. Petrol consumption was said to have been low, as compared with military experience. A 400 h.p. Liberty motor used 17 gallons per hour.

The "efficiency" table of the service for the month of June (25 days only reckoned shows that on no fewer than 19 days the efficiency was 100 per cent., on five days 75 per cent., and on the remaining day 50 per cent.

Captain B. B. Lipsner has resigned his army commission to become the new superviser of the service from Washington to New York and to develop the service on lines similar to those of the railway mail service. This means, it is stated, operating it with civilians. The change will be made as soon as feasible, and the air mail, being no longer an experiment, but a recognised postal service, will be operated in all weathers. It is suggested that the service will be known as the "planepost."

A few days ago the aerial mail established a remarkable time record in delivering valuable documents from New York to Washington on a rush order, a distance of 225 miles in two hours and a half, or at the rate of 90 miles an hour.

The documents, which were required in a hurry by the Postmaster-General, were no other than advance proofs of the maps of the Woodrow Wilson airway, which are made especially for the use of aviators and show landmarks, elevations, and other important details to guide them when flying.

The Woodrow Wilson airway is a belt 20 miles wide following the great circle from New York to San Francisco.



Points of Peril

TESTIMONIAL.

". . . Herewith the goggles which my son was wearing when he had a severe accident in France A bullet struck the goggles, which were just above his eyes on his forehead, and he saw it rebound and disappear; but never a splinter or scratch on his face. He says had they been other than Triplex, he feels sure not only he would have been cut or perhaps blinded, but he thinks the blood anyhow would have prevented him seeing his friend—the Hun—clearly enough to down him, which he was able to do. . . ."

The danger of breaking glass can only be likened to the peril of the bayonet point, for ordinary glass breaks into long spiteful slivers and penetrating splinters. Why not adopt the "Safety First" policy?

It is not well to trust ordinary glass—put your trust in Triplex. Triplex will undergo the most heavy concussion the impact of bullet or direct blows and yet be serviceable—and never, never splinter. That means safety for you under all conditions. Airmen and motorists and sailors have *proved* the efficacy of Triplex, the world over

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AERO ENGINES

THE SOCIETY OF BRITISH AIRCRAFT CONSTRUCTORS S.B.A.C.

W. H. ALLEN, SON & CO. LTD.

BEDFORD, ENGLAND.

AIRCRAFT FINANCE

CURRENT TOPICS.

Buoyant Stock Exchange.

Cheered by the military developments, and undisturbed by domesticities, the Financial World jogs on, happily confident that in the end things will pan out quite all right. This is the holiday season and there are indications that business is contracting here and there as a consequence, but there is plenty of money searching for employment in other things than War Bonds.

So long as the financing of the war goes on satisfactorily, the House is comfortable enough, and, in this connection, one still derives satisfaction from the weekly revenue figures which prove, beyond all doubt, that people throughout the country are buying National War Bonds and War Saving Certificates, not to mention Treasury bills, on a generous scale.

Activity of Aircraft Shares.

Considerable animation has been witnessed in the shares connected with the Aircraft Industry. It originated from the belief that the increasing activity on the Western front must result from a corresponding augmentation in the production of aeroplanes, and, of course, of profit to the manufacturers. It is plausible and serves the purpose.

Triumphs in Favour.

Vauxhall Motors have been specially prominent, rising to 33s. 6d., and there has been no slackening of the interest in Charrons which have been changing hands at 24s., compared with under £1 a few weeks ago. Triumphs command practically 50s., which compare with only 40s. early in the year. In some quarters it is not believed that the dividend due in November will be increased from 15 per cent., but elsewhere the opinion is that the results will fully justify the present valuation of the shares. Should the dividend be merely maintained the shares would represent a return of 6 per cent., which seems barely adequate, all things considered.

High Price of Sunbeams.

Sunbeam Motors have been in strong demand, chiefly on Provincial account, and the idea seems to be that the results shortly to be announced will justify the higher quotation. For the financial year, 1915-16, the dividend was 15 per cent., plus 1s. per share, both free of tax, on which basis the shares, at the price of 85s., represent a return to the purchaser of less than 5 per cent. Even allowing for the fact that this yield is net, which is a considerable difference to a yield, subject to a tax deduction, the price would seem to be rather high. It is another matter, of course, if the distribution is increased by another 10 per cent. or so.

What the Ford Company is Doing.

It is said, unofficially, that the Ford Co., famed for its motor-cars, has war orders in hand, representing, in the aggregate, $350,000,000. This business comprises Liberty engines, tractors, small tanks, ambulances, and Eagles, and small submarine chasers. This may seem a rather tall order, even in the United States, which is the home of tall things, but it may really not be an exaggeration of actual fact. The Ford is a gigantic undertaking, possessing ample plant and a huge productive capacity for some of the essential things of the present war.

Reflections.

There is, perhaps, a touch of irony about this proclamation of the enormous war work in hand. Who has forgotten the Ford Mission ship, with its weird passenger list of gospellers bent on Peace? Since his conversion to the gospel of force as the only cure for Hun monomania, Mr Ford has evidently been working at high pressure. It would be very interesting to know what proportion of the $350,000,000 is represented by "Liberty" engines.

Wolseleys are Congratulated.

Two annual reports and accounts are issued simultaneously by the Wolseley Motor Co This is an auxiliary of Vickers, the big armament people, who own all the ordinary shares. At the outset it may be mentioned that the Air Ministry has requested the directors to convey to the staff and workers congratulations on the highly satisfactory performance of their productions. This is quite pleasant.

A Sound Policy.

The position disclosed is an excellent one, and yet no dividend is to be paid on the ordinary shares. This policy may be taken as indicating that Vickers would prefer to reap a bigger and richer harvest of direct profit later on rather than taking the dividends now. It is quite sound.

How Profits Compare.

For 1916 a trading profit of £195,005 is shown, and after meeting charges there is a balance of £102,709. The dividend on the 7 per cent. preference shares absorbs £21,000, and no less a sum than £60,000 is placed to the reserve fund. The trading profit for 1917 reached £214,329 after providing for expenses and depreciation, for which, it is remembered by the auditors, increased provision has been made compared with previous years.

The amount reserved for income-tax is £75,000 against £55,000. There is added to the general reserve £50,000, while £47,433 is written off discount and expenses with the issue of debenture stock and increase of capital, which item now disappears.

Preference Shares as an Investment.

With the last addition the reserve fund is brought up to £150,000, which is just one quarter of the capital. It is pretty clear that a substantial dividend could have been paid on the ordinary shares of £300,000 had it been wished. Anyway, the preference shares at 21s. 6d. seem to constitute an excellent investment, offering the purchaser rather more than 6 per cent. on the money laid out.

Trade Returns.

The July trade returns show an increase of £195,449 to £850,391 in the imports of machinery, bringing the year's increase up to £1,776,856. Imports of iron and steel manufactures reached only £631,048, a decrease of £276,759, compared with the corresponding month of 1917. Manufactured articles of other metals figured at £2,434,379. a decrease of £191,428, reducing the increase for the year to date to £7,482,373. Wood manufactures imported during the month amounted to £164,010, an increase of £82,656, bringing the increase for the year to date up to £534,538 Imports of carriages and trucks, motor-cars and cycles amounted to £2,207,734 an increase of £1,672,433 for the month and £4,040,854 for the year to date.

Exports were on a reduced scale, iron and steel manufactures being £3,458,774 for the month, a decrease of £1,377,707, making the total decrease for the year £6,946,403. Machinery exports figured at £1,436,688, or a decrease of £476,398, bringing the total decrease to date up to £2,437,424. Exports of carriages and trucks, motor-cars and cycles reached £341,360, a decrease of £351,552 on the month, which reduces the increase to date to £639,076.

COMPANY ANNOUNCEMENTS.

The files of the following new companies are available for inspection at Somerset House.

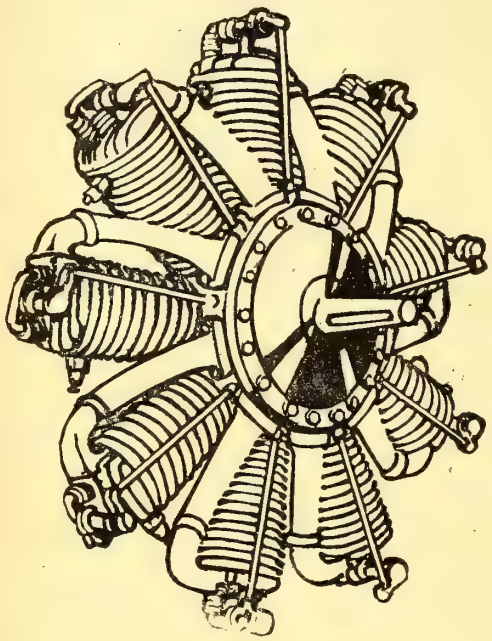
NEW COMPANIES.

Coventry Aviation Co., Limited.—Private company. Registered Aug. 19th. Capital, £5,000 in £1 shares. To enter into an agreement with W. B. Jennings, L. B. Booth, and J. N. Parr (trading as the Coventry Aviation Co), and to carry on the business of manufacturers of and dealers in aeroplanes, airships, and machines, etc. The subscribers (each with one share) are:—W. B. Jennings, 16, Lansdowne Circus, Leamington Spa, managing partner; L. B. Booth, Fieldgate Close, Kenilworth, turner and toolmaker; J. N. Parr, "Westwood," Langford Road, Heaton Chapel, Stockport, buyer. The first directors are to be appointed by the subscribers. Solicitor: G. W. Moore, 8, High Street, Coventry.

MORTGAGES, CHARGES AND SATISFACTIONS.

Canute Airplane Co., Ltd.—Particulars of £15,000 debentures created Aug. 3rd, 1918, filed, the whole amount being now issued. Property charged: The company's property, present and future, including uncalled capital. No trustees.

Barningham, Ltd.—Mortgage dated Aug. 1st, 1918, to secure £60,000 (repayable with premium of £30,000) and all further sums advanced by Copley's, Ltd., 1, Queen Victoria Street, E.C., charged on an annuity of £400 and payable till 1974, and the company's general assets.



F. W. BERWICK & Co., Ltd.

AEROPLANE & AERO ENGINE MANUFACTURERS TO THE AIR COUNCIL.

PARK ROYAL :: LONDON, N.W. 10.

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Proprietors and Manufacturers of Sizaire-Berwick Cars.

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The following are now IN STOCK:—

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" " " Dies, R/H 3/16" to 1"; L/H 1/4" to 3/8".
British Association Taps, R/H. All sizes from No. 0 to 12. L/H Nos. 2 & 4.
" " Dies, R/H. Nos. 0, 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13.
System International Taps and Dies. All sizes from 2'''/m to 18'''/m with pitches generally in use for Aero Engine Work.
Whitworth Standard Tap and Dies, R/H. All sizes from 1/8" to 7/8".
Lowenherz Standard Taps and Dies, R/H. All sizes from 2·3'''/m to 9·0'''/m.
Carbon Drills ... ... { All Wire gauge sizes from No. 1 to 66. / All Fractional sizes from 1/32" to 1/2". / Large range Metric sizes from 1'''/m to 25'''/m.

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(*Continued from page 732.*)

OFFICIAL COMMUNIQUES.

NAVAL.

ADMIRALTY COMMUNIQUÉ

AUG. 21st.—During the period Aug. 15th to 18th inclusive, Royal Air Force contingents, working with the Navy, have bombed the following military objectives :—

Solway Works, Zeebrugge, Bruges Docks, Anti-Aircraft Batteries, Westende, Ostend Docks, Zeebrugge, Aertrycke, Middelkerke, Plaaschendaele Canal, Stalhille Dump, Meetkerke, Leffinghe, Zeebrugge-Bruges Canal, Enemy Shipping.

Between 15 and 16 tons of explosives were dropped and good results obtained.

Reconnaissance, photographic, and anti-submarine patrols have been maintained.

During the course of these operations, nine enemy machines have been destroyed and eight driven down out of control. We have lost four machines, one of which landed in Holland, and three officers have been wounded.

In home waters, during the same period, anti-submarine, convoy, and hostile aircraft patrols have been maintained by seaplanes, aeroplanes, and airships. Submarines have been sighted and attacked and mines located and destroyed.

One machine has failed to return from patrol.

MILITARY.

G.H.Q. COMMUNIQUÉS.

AUG. 20th, 7.45 p.m.—Early in the morning of Aug. 19th some of our squadrons combined in a very successful attack on Phalempin aerodrome, south of Lille. Many bombs were dropped from a low height and machine-guns were used with good effect on ground targets. Several aeroplane sheds were hit and big fires started. Some enemy machines which attempted to interfere with our aeroplanes from the air were prevented from attacking by our escorting squadrons.

All the machines engaged on this raid returned safely.

Bruges Docks, the railway at Roistel, and a number of enemy dumps were also heavily bombed by us. The total weight of bombs dropped during the day amounted to 15½ tons.

A good deal of reconnaissance, photographic, and observation work was also carried out by our aviators.

In air fighting 13 enemy machines were destroyed and six driven down out of control. In addition, one hostile aeroplane was shot down and another brought down out of control by fire from the ground. Four German balloons in the Merville sector were set on fire by one of our aviators.

Seven of our machines are missing.

Unfavourable weather prevented any flying at night.

AUG. 21st 9.5 p.m.—On Aug. 20th enemy activity in the air was very slight. We brought down one hostile aeroplane, and one of our own machines is missing. Low clouds prevented all flying at night.

AUG. 22nd, 9.9 p.m.—The thick mist which prevailed during the early morning of Aug. 21st prevented our aeroplanes from taking part in the battle at the opening of the attack north of the Ancre. As the morning advanced the sky grew clearer, and for the rest of the day our aviators were actively engaged.

Some machines devoted themselves to the work of contact patrol, and reported the positions of our advancing troops to their headquarters from time to time. Other machines attacked hostile troops and transport from low altitudes with bombs and machine-gun fire, scattering ammunition wagons and columns on the march.

In several cases German guns firing at our tanks were silenced by bombs and machine-gun fire from the air.

A great deal of work was done also in reporting active hostile batteries to our artillery as well as in reconnaissances and observation of our artillery fire. Twelve tons of bombs were dropped by us during the day.

In air fighting 21 hostile machines were destroyed and eight others driven down out of control. One German balloon was shot down in flames.

Eight of our machines are missing.

On the night of Aug. 21st-22nd there was bright moonlight and a clear sky. Our night-bombing aeroplanes dropped more than 25 tons of bombs on different targets. Cambrai and Marcoing stations were heavily attacked, as well as a number of railway bridges and lines, aerodromes, and billets. The bridge at Aubigny-au-Bac on the road connecting Douai and Cambrai was broken down.

All our machines returned safely.

One of our night-flying machines brought down in flames on this side of the line a large enemy night-bombing aeroplane.

The machine reported in yesterday's communiqué as missing has now returned.

AUG. 23rd, 9 p.m.—Our aviators had a busy and successful day on Aug. 22nd. Clear weather enabled photographic and reconnaissance work to be carried out, and a large number of hostile batteries and other targets were engaged by our artillery with aeroplane and balloon observation. The position of our advancing infantry was ascertained and reported by our machines, while the enemy was constantly harassed from the air. During the day 35 tons of bombs were dropped by us.

Gondecourt aerodrome was attacked in the early morning from a low height with good effect, and many of the enemy's dumps, stations, and bridges were heavily assailed, as well as Bruges Docks.

Combats in the air were numerous, and 29 German aeroplanes and eight balloons were destroyed. Four hostile machines were driven down out of control.

Three of our machines are missing.

There was a further heavy bombing at night, a total of 19 tons of bombs being discharged upon selected targets, of which the railway junction at Valenciennes, Somain, Douai, and Cambrai were the chief.

All our night-flying aeroplanes returned safely, and one of them brought down a large enemy night-bombing machine on our side of the line.

AUG. 24th.—On Aug. 23rd our machines co-operated closely throughout the day with our troops in the battle area, keeping touch with their advance and reporting enemy movements. Observation for artillery fire by balloons and aeroplanes was carried on as usual. Our low-flying squadrons constantly attacked with machine-gun fire and bombed the German infantry wagons and guns, throwing them into confusion. Our squadrons, co-operating with tanks, silenced enemy batteries which were impeding the advance.

A bombing raid on the German aerodrome at Cantin, south of Douai, was carried out by some of our scouts and escorting machines. Several of the hangers were set on fire by direct hits, and machine-gun fire was opened from a very low height on troops and transport near by. An enemy machine which attacked our raiders was shot down. All our machines engaged in the raid returned safely. A total of 26 tons of bombs was dropped by our aviators during the day.

Twelve enemy machines were destroyed by us in air fighting, and two more were brought down by fire from the ground. Three other hostile machines were driven down out of control. Four German balloons were shot down in flames.

Four of our machines are missing.

At night, though the weather was cloudy, nearly five tons of bombs were dropped by us without loss.

During the last fortnight 328 German aeroplanes have been brought down by our aviators on the Western front and 134 driven down out of control. The enemy balloons shot down in the same period amount to 31. The total weight of bombs dropped by us during this period is 591 tons.

AUG. 25th.—On Aug. 24th our aviators carried out another day of varied work, including much low-flying and artillery observation. Enemy machines were not very active till the evening. Seven hostile aeroplanes were driven down by us, and five German balloons were shot down in flames.

Ten of our own machines are missing.

During the 24 hours we dropped 43 tons of bombs (on) Valenciennes and Cambrai, railway connections being attacked amongst other targets. All our night-flying aeroplanes returned safely. We succeeded in destroying two enemy night-bombing machines.

AUG. 26th, 8.58 p.m.—Throughout Aug. 25th our low-flying machines continued to harass the enemy by bombs and machine-gun fire directed upon his infantry guns, transport, and trains. Other machines kept contact with our own troops and observed for our artillery. Photography and reconnaissance were carried on as usual.

Thirty-two tons of bombs were dropped by us during the day on railway junctions, such as Cambrai and Valenciennes, on enemy dumps, and on Bruges Docks.

A hostile aerodrome was successfully bombed.

Twenty-five German machines were brought down by us and one German balloon was destroyed. Thirteen hostile machines were driven down out of control.

Five of our machines are missing. Heavy rain prevented night flying.

WAR OFFICE COMMUNIQUÉS.

AUG. 21st, 11 a.m.—The Secretary of the War Office announces that the Army Council have decided that, in respect of services in the Army, the Distinguished Service Order, the Military Cross, and the Distinguished Conduct Medal shall be regarded, as from Aug. 1st last, as distinctions to be awarded for "services in action" only.

The term, "services in action," shall be held to mean :—

(i) Services under fire.

(ii) Distinguished individual services in connection with air raids, bombardments, or other enemy action which at the time produces conditions equivalent to services in actual combat, and demands the same personal elements of command, initiative, or control on the part of individuals, and, in a lesser degree only, possibly entails the same risks.

In no circumstances will any exception to this rule be allowed.

AIR FORCE.

AIR MINISTRY COMMUNIQUÉS.

The following dispatches have been received from the Headquarters of the R.A.F. Independent Force, in France :—

AUG. 20th.—On the night of the 19th-20th our squadrons again attacked hostile aerodromes and railways. Hangars, trains, and various ground targets were bombed and subjected to machine-gun fire.

All our machines returned safely.

AUG. 22nd.—In spite of the enemy's most determined efforts for protection, consisting of a large number of fighting machines and a greatly increased number of anti-aircraft guns, between the hours of 8 p.m. on the 21st and 10 a.m on the 22nd inst. five important towns in Germany were heavily attacked, as well as five hostile aerodromes.

On the night of the 21st-22nd inst. weather conditions were exceptionally good, and a large amount of the work was carried out by our squadrons.

Military objectives at Frankfort and Cologne were heavily attacked. Very good results were observed, and bombs were sent all around the stations and barracks.

The railway junction at Trèves was also successfully attacked.

All our machines returned safely.

Four hostile aerodromes were heavily bombed, and many hangars hit. Machine-guns were freely used on hangars, trains, searchlights, and anti-aircraft guns.

One of our machines is missing.

On the morning of the 22nd inst. one of our squadrons attacked the chemical factories at Mannheim. During heavy fighting on the outward journey two of our machines were brought down. The remainder reached and successfully bombed the objective. Very fierce fighting again took place on the return journey, as a result of which five more of our machines are missing. Three hostile machines were destroyed; two of these were seen to crash, and one went down in flames.

Two other squadrons attacked the railway sidings at Coblentz at about 7.30 a.m., and a hostile aerodrome at Hagenau, with very good results.

All of these machines returned safely.

One hundred and ninety-four bombs were dropped by night and 21 tons of bombs by day.

AUG. 24th.—On the night of the 22nd-23rd instant our squadrons made a concentrated attack on the hostile aerodromes at Folpersweiler, on which eight tons of bombs were dropped. Several large sheds and hangars were set on fire.

One of our machines attacked the chemical factories at Saaralbe, where excellent results were obtained. Fires and explosions were seen for one and a half miles after the attack. Various railway targets were also bombed with good effect.

Three of our machines are missing.

On the morning of the 23rd instant our machines successfully attacked the hostile aerodrome at Buhl. The railway junction at Treves was also attacked, and several bursts were observed in the station and on the railway.

All our machines returned safely.

The machine previously reported as missing on the night of the 18th-19th instant has now been located, undamaged.

On the night of the 23rd-24th instant, in spite of thunderstorms, our squadrons carried out operations against a hostile aerodrome and the railway junction at Ehrange. A fire was caused and considerable damage done at the latter place.

All our machines returned safely.

On the 25th instant our machines successfully attacked a hostile aerodrome and the railway stations at Bettemburg and Luxemburg. Excellent results were obtained on the railway stations.

Aug. 26th, 10.40 p.m.—On the night of the 25th-26th our machines successfully attacked the railway station at Frankfurt and the chemical factories at Mannheim.

Very good results were obtained at Frankfurt.

Two tons of bombs were dropped on the factories at Mannheim, causing fires and explosions.

All these machines flew through heavy thunderstorms to attain their objective. Other machines attacked a hostile aerodrome, and dropped four tons' weight of bombs with good results

All of our machines returned safely.

THE CASUALTY LIST.

MILITARY.

Reported Aug. 23rd.

Indian Forces.—Missing.—Forrest, Lt. L. H., I.A. Inf., attd. R.A.F.

Canadian Force.—Missing.—Goodale, Lt. W. H., Sask. R., attd. R.A.F.

The following officers, who were prisoners in Germany, have now arrived in England :—

Mitchell, Sec. Lt. H. B. O., M.C., R. Innis. Fus., attd. R.F.C.

Canadian Force.—Owen, Capt. D., N. S. Regt., attd. R.F.C.

Reported Aug. 24th.

Canadian Force.—Missing.—Boger, Lt. W. O., Can. Cav., attd. R.A.F.

Reported Aug. 27th.—

Canadian Force.—Died of Wounds.—Cunningham, Lt. H. S., W. Ont. R., attd. R.A.F.

Australian Force.—Previously reported Missing, now reported Killed.—Chapman, Lt. J. E., F.C.

Accidentally Killed.—Shepherd, Sec. Lt. O. D., F.C.

Missing.—Bice, Lt. E. J., M.C., F.C.

Chapman, Lt. J. E., F.C.

The following officers, who were prisoners in Germany, have now arrived in England :—

Atkinson, Lt. J. M., A.S.C., attd. R.F.C.; Fairbairn, Lt. J., R.F.C.; Golding, Sec. Lt. K. L., R.F.C.; Heppell, Lt. P. F., R.A.F., attd. R.F.C.; Heyworth, Lt. E. L., R.F.C.; Morrison, Lt. K. S., R.F.C.

Casualties among Wt. Os., N.C.Os. and Men. The Dates are those of the Official List.

Previously Missing, now reported by the German Government Killed or Died of Wounds.

Aug. 13th.—R.F.C.—Robertson 57731 2nd Cl. Air. Mech F. G. (Kirkcaldy).

Australian Imperial Forces.

Wounded.

Aug. 13th.—F.C.—Toole 1650 J. H.

AIR FORCE.

Reported Aug. 21st.

Killed.—Burton, Sec. Lt. S. G., R.A.F.
Cannon, Sec. Lt. F. W., R.A.F.
Grimwade, Sec. Lt. S. A., R.A.F.
Hatcher, Sec. Lt. H. B., R.A.F.
Jacques, Lt. H. M., R.A.F.
McHarg, Lt. L. H., R.A.F.
Walker, Lt. H. W., R.A.F.

Wounded.—Akin, Lt. T. A., R.A.F.; Amatt, Lt. E. G., R.A.F.; Bird, Sec. Lt. F. A., R.A.F.; Bruce, Lt. E. R., R.A.F.; Dempster, Sec. Lt. D. F., R.A.F.; Dendy, Sec. Lt. P., R.A.F.; Dunn, Sec. Lt. J., Cam. Highrs., attd R.A.F.; Gall, Lt. F. L., R.A.F.; Hawkins, Sec. Lt. V. S. G., R.A.F.; Ive, Lt. A. H., R.A.F.; Maclatchy, Lt. R. S., R.A.F.; McAlery, Capt. J. M., R.A.F.; Mellor, Sec. Lt. A. B., R.A.F.; Menendez, Lt. F. T. S., R.A.F.; Pinkerton, Sec. Lt. D. M., R.A.F.; Reynolds, Capt. F. G., B, Bucks R., T.F., and R.A.F.; Robinson, Lt. F. E., R.A.F.

Missing.—Coombs, Sec. Lt. E. S., R.A.F.; Harmond, Lt. H. L., R.A.F.; Hutchinson, Sec. Lt. W. J., R.A.F.; John, Lt. W. A., Sussex Yeo., T.F., attd. R.A.F.; Matthews, Capt. J. W., R.A.F.

Reported Aug 22nd.

Killed.—Butler, Sec. Lt. W. A. M., R.A.F.
McEvoy, Sec. Lt. E., R.A.F.
Nutcombe, Sec. Lt. T. A., E. Lanc. R., attd. R.A.F.
Ranney, Lt. K. A., R.A.F.
Sayers, Sec. Lt. L. F. C., R.A.F.
Smith, Sec. Lt. H. S., Lond. R., attd R.A.F.

Died.—Gant, Lt. R. W., R.A.F.
Scholte, Lt. O. J. F., Bedf. R. and R.A.F.

Wounded.—Dunbar, Sec. Lt. J. H., R.A.F.; Mawle, Lt. N. W. R., Lond. R. (T.F.) and R.A.F.; Percival, Lt. J. F. S., R.A.F.; Robinson, Lt. A. W., R.A.F.; Weakley, Lt. E. G. K., R.A.F.

Missing.—Arundel, Lt. P. W. R., R.A.F.; Chase, Sec. Lt. D. E., R.A.F.; Cox, Sec. Lt. W., R.A.F.; Doncaster, Sec. Lt. A. E., R.A.F.; Hall, Sec. Lt. J. G., R.A.F.; Lovell, Sec. Lt. C. E. A., R.A.F.; Riddell, Lt. L. H., R.A.F.; Sampson, Lt. A. T., R.A.F.

Reported Aug. 23rd.

Killed.—MacKenzie, Sec. Lt. D. F., R.A.F.
Morby, Sec. Lt. J. S., Lond. R. and R.A.F.
Richards, Sec. Lt. H. S., Essex R. and R.A.F.
Small, Lt. J. B., Rif. Brig., attd. R.A.F.
Todman, Lt. C. V., Lond. R., attd. R.A.F.
Williams, Lt. C. H., R.A.F.

Died of Wounds.—Barker, Lt. C. N., R.A.F.
Olmstead, Sec. Lt. G. T., R.A.F.

Wounded.—Holmes, Sec. Lt. W., R.A.F.; Ibbotson, Sec. Lt. F., Sher. For. and R.A.F.; Little, Lt. H. R., R.A.F.; May, Lt. W. R., R.A.F.; Williams, Lt. A. F., Mon. R. and R.A.F.

Missing.—Anderson, Lt. J. D., R.A.F.; Brookes, Sec Lt. W. L., R.A.F.; Brown, Lt. H. M., R.A.F.; Brown, Lt. L. L., R.A.F.; Foster-Sutton, S. W. P., Buffs, attd. R.A.F.; Hamilton, Lt. A., R.A.F.; Hemmens, Lt. R. H., R.A.F.; Lefroy, Lt. C. B. H., R.A.F.; Thompson, Sec. Lt. L., R.A.F.; Tison, Sec. Lt. M., R.A.F.

Reported Aug. 24th.

Killed.—Adam, Lt. W., R. Scots Fus. and R.A.F.
Benitz, Lt. F. A., R.A.F.
Cloete, Sec. Lt. M. N., R.A.F.
Foggin, Maj. C. E., R.A.F.
Green, Sec. Lt. M. L., R.A.F.
Kesterton, Sec. Lt. T. F., R.A.F.
May, Sec. Lt. T. R. A., R.A.F.
Sproson, Lt. W. W., Lancs. Fus. and R.A.F.

Wounded.—Aymard, Lt. M. F. L., R.F.A., attd. R.A.F.; Batchelor, Maj. T. A., R.A.F.; Beesley, Sec. Lt. E. R., R.A.F.; Bowman, Sec. Lt. A., K.L.R. and R.A.F.; Cooke, Lt. B. A., R.A.F.; Lewis, Sec. Lt. J. A., S. Wales Bord., attd. R.A.F.; Malone, Sec. Lt. C., R.A.F.; Norman, Lt. R. E., R.A.F.; Pugh, Lt. L. J., R.A.F.; Richardson, Lt. J. T. R.A.F.; Straker, Sec. Lt. G. V., R.A.F.; Watkins, Sec. Lt. J. R., R.A.F.; Williams, Lt. W. C., Leic. R. and R.A.F.; Williams, Sec. Lt. H. L., R.A.F.; Wormald, Sec. Lt. W. M., R.A.F.

Missing.—Hodson, Lt. G. F., R.A.F.; Jardine, Capt. B. G., R.A.F.; Munday, Lt. E. R., R.A.F.

Reported Aug. 26th.

Killed.—Fleet, Sec. Lt. J. G., R.A.F.
Gillespie, Sec. Lt. R. H., R.A.F.
Goodburn, Sec. Lt. R., R.A.F.
Hunter, Lt. A. J., Middx. R. and R.A.F.
Meikle, Sec. Lt. A. J. B., R.A.F.
Roscoe, Sec. Lt. J. F., R.A.F.

Died of Wounds.—McCallum, Lt. J. M., R.A.F.

Died.—Berry, Lt. E. A., R.A.F.

Wounded.—Adamson, Lt. W., R.A.F.; Bryning, Lt. H. E. W., R.A.F.; de Jaen, Sec. Lt. L. L., R.A.F.; Haines, Sec. Lt. A. L. F., R.A.F.; Jones, Lt. W., Worc. R., attd. R.A.F.; Northridge, Sec. Lt. G. W., R.A.F.; Plant, Sec. Lt. O., R.A.F., Pullen, Sec. Lt. C. E., R.A.F.; Robertson, Sec. Lt. A., R.A.F.; Smith, Sec. Lt. J. R., R.A.F.; Stokes, Lt. R. C., R.A.F.; Turner, Capt. F. McD. C., R.A.F.

Missing.—Block, Sec. Lt. F. A., R.A.F.; Doncaster, Sec. Lt. E. L., R.A.F.; Gaukroger, Lt. J. K., R.A.F. Goffe, Sec. Lt. W., R.A.F.; Gonne, Capt. M. E., Royal Fus. and R.A.F.; Gorman, Lt. G. W., R.A.F. Hartley, Sec. Lt., W. N., R.A.F.; Kelly, Sec. Lt. R., Rif. Brig. and R.A.F.; Mallett, Lt. H. P., R.A.F., Parke, Sec. Lt. J. E., Royal Fus. and R.A.F., Powell, Capt. F. G., R.A.F.; Ramsey, Lt. G. S., R.A.F.; Russell, Lt. F. C., R.A.F.; Schooling, Sec. Lt. G. R., Northd. Fus., attd. R.A.F.; Whitfield, Capt. G. H. P., R.I.R. and R.A.F.

Reported Aug. 27th.

Killed.—Goosey, Sec. Lt. H., North'n R. and R.A.F.
Isaac, Sec. Lt. W. A., R.A.F.
Metcalfe, Sec. Lt. N., R.A.F.
Plant, Sec. Lt. C. R., R.A.F.
Tayler, Lt. J. A. C., R.A.F.
Young, Capt. W. B., R.A.F.

Died of Wounds.—Paget, Sec. Lt. F. J., R.A.F.

Wounded.—Ankers, Capt. B., R.A.F.; Beauchamp, Sec. Lt. A. W. L., R.A.F.; Cook, Lt. R., R.A.F.; Coulson Lt. C. S. L., R.A.F.; Davies, Sec. Lt. H. H., R.A.F.; Duckworth, Sec. Lt. J. T., R.A.F.; Ferguson, Sec. Lt. J. C., R.A.F.; Foot, Lt. W. A., R.A.F.; Miseroy, Sec. Lt. F. B., R.A.F.; Parker, Sec. Lt. O. S., R.A.F.; Pearson, Lt. O., R.A.F.; St. Cair-Morford, Capt. A. C., R.M.L.I., attd. R.A.F.; Wilson, Capt. F. P., R.A.F.; Yates, Sec. Lt. A. J., **R.A.F.**

Missing.—Bradford, Sec. Lt. W. W., R.A.F.; Brookes, Capt. E. G., D.F.C., R.A.F.; Carter, Sec. Lt. G. L., R.A.F.; Elliott, Sec. Lt. H., R.A.F.; Foggo, Lt. N. O. M., R.A.F.; Gray, Sec. Lt. V. S., Suff. R. and R.A.F.; Hudson, Sec. Lt. H. E., R.A.F.; McConnell-Wood, Lt. A., R.A.F.; McCutcheon, Sec. Lt. B. J., R.A.F.; Nuttall, Lt. J. C., R.A.F.; Pearson, Sec. Lt. B. C., K.O. (Yorks. L.I.) and R.A.F.; Rogers, Lt. F. I., Middx. R. (S.R.) attd. R.A.F.; Taylor, Lt. R. E., R.A.F.; Wignall, Sec. Lt. G., R.A.F.; Wood, Lt. C. L., R.A.F., Wood. Lt. H. H., R.A.F.

Reported Aug. 28th.

Killed.—Booth, Sec. Lt. E. B., R.A.F.
Estcourt, Lt. A. C. S., R.A.F.
Orr, Lt. R. S. S., R.A.F.
Robinson, Lt. A. D., R.A.F.
Ross, Sec. Lt. J., R.A.F.
Smith, Sec. Lt. S. A., R.A.F.
Street, Lt. B. H., Welsh R. and R.A.F.

Died of Wounds.—Nash, Lt. T. S., R.A.F.
Ramsay, Lt. M. O., R.A.F.

Wounded.—Adamson, Lt. D. B., R.A.F.; Bremicker, Lt. C. T., R.A.F.; Buckley, Sec. Lt. H., R.A.F.; Downes, Capt. C. N., R.A.F.; Ferrier, Lt. A. J., Shrops. L.I. and R.A.F.; Hayes, Capt. T., R.A.F.; Jackson, Lt. H., Maltese Militia and R.A.F.; Saville, Sec. Lt. W. C., R.A.F.; Seaton, Sec. Lt. J. E., R.A.F.

Missing.—Baird, Sec. Lt. R. O., R.A.F.; Butterworth, Sec. Lt. H., R.A.F.; Carpenter, Lt. F., R.A.F.; Dore, Capt. W. H., R.A.F.; Emtage, Sec. Lt. J. E., R.A.F.; Hawley, Lt. A. C. R., R.A.F.; Hill, Sec. Lt. S. J., R.A.F.; Jones, Sec Lt. J. W., R.A.F.; Mayo, Capt. A. J., R.A.F.; Mills, Capt. K. C., R.A.F., Musgrove, Sec. Lt. H. S., R.A.F.; Pitt-Pitts, Lt. W. J., R.A.F.; Reveley, Lt. P. T. A., R.A.F.; Wallace, Sec. Lt. J. E., R.A.F.; Willis, Sec. Lt. P., R.A.F.; Yates, Lt. J. A., R.A.F.

Casualties among Wt.Os., N.C.Os. and Men of the R.A.F. The Dates are those of the Official List.

Killed.

Aug. 22nd.—Cormack P/116814 Serjt. J. O. (Leith), Cowell 78171 Serjt.-Mech. J. J. (Limerick); Fear 83321 Air Mech. 3rd Cl. E. J (Ebury Bridge, S.W.); Heighes 19483 Pte. 1st Cl. S. F. (Harlesden, London); Hill 2767 Cpl. C. (Aston, Birmingham); Howard 125246 Pte. 2nd Cl. W. (Bradford, Yorks); Noble 43315 Serjt.-Mech. F. R. (Tulse Hill, S.W.); Porter 16578 Air Mech. 1st Cl. G. (Kennington Road, S.E.); Rayner 16554 Air Mech. 1st Cl. C. W. (Islington, N.).

Aug. 28th.—McCluskey 406471 1st Pte. J (Swalwell, Co. Durham).

Died of Wounds

Aug. 20th.—Elmes 402648 Pte. 1st Cl. L. A. (Thornton Heath, Surrey); Smith L/8857 Pte. 1st Cl. J. W. (Wimbledon, S.W.).

Aug. 22nd.—Hines 55393 Air Mech. 3rd Cl. G. (Stepney, E.); Scott 240836 Pte. 2nd Cl. P. A. (New Carsnick, Yorks); Taylor 23436 Air Mech. 1st Cl. B. A. (King's Lynn).

Aug. 28th.—Kirkham 32408 3rd Cl. Air Mech. A. (Manchester); Robinson 17412 1st Cl. Pte. C. W. S. (West Kensington).

Died.

Aug. 20th.—Gate 112130 Pte. 2nd Cl. W. J. (Aspatria, Cumberland).

Aug. 28th.—Towill 238602 1st Cl. Pte. C. (Stanwix, Carlisle).

Wounded.

Aug. 20th.—Addy 95751 Air Mech. 3rd Cl. S. N. (Boston, Lincolnshire); Baker 90009 Air Mech. 3rd Cl. H. R. (Bermondsey, S.E.); Duley 237375 Pte. 2nd Cl. S. (East Ham); Keeling 127170 Air Mech. 3rd Cl. A. E. (Blackpool); Rowe 91975 Serjt.-Mech. L. H. (Newton Abbott, Devon); Silvester 141020 Air Mech. 3rd Cl. H. S. (Wolverhampton); Sowden 100548 Serjt.-Mech. C. G. (Bradford); Williams 207013 Cpl. H. (Folkestone).

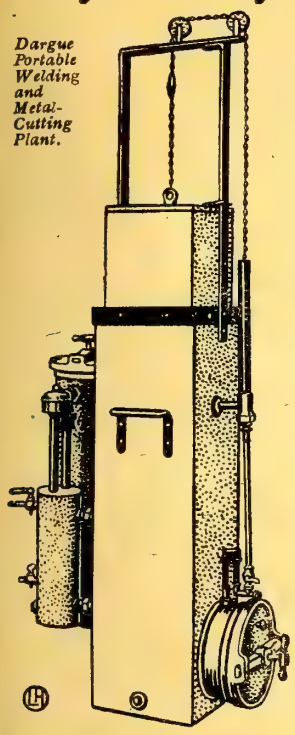
Aug. 22nd.—Bancroft 29556 Air Mech. 1st Cl. E. (Oldham); Barker 203824 Serjt.-Mech. R. R. S. (Putney, S.W.); Cook 94956 Pte. 2nd Cl. J. (Danesmoor, Manchester); Cooper, 111176 Cpl.-Mech. A. J. (Ipswich); Davies 2150 Serjt-Mech. T. W. (Walton, Liverpool); Farmer 940 Cpl.-Mech. G. (Skegness); Greenspan 82045 Pte. 2nd Cl. J. (Hackney); Harrison 32407 Air Mech. 1st Cl. H. (Leicester); Jubb 51013 Air Mech. 1st Cl. (New Wortley, Leeds); Laycock 44725 Air Mech. 3rd Cl. R. H. (Armley, Leeds); Matthews 51680 Air Mech. 3rd Cl. J. (Dorrington); Millar 54230 Pte. 1st Cl. D. F. C. (Dundee); Newton 59365 Air Mech. 3rd Cl. E. C. (Grimsby); Oakley 3439 Pte. 1st Cl. A. (Southampton); Orford 27655 Air Mech. 3rd Cl. J. C. (East Dulwich); Pollard 3712 Air Mech. 1st Cl. (Halifax); Sargent 43997 Air Mech. 2nd Cl. J (Peterborough); Wassell 13131 Pte. 2nd Cl. A. H. (Brighton)

Aug. 28th.—Brown 16589 1st Cl. Air Mech. C. (Gainsborough); Spaulding 220568 1st Cl. Pte W. J. (Thornton Hill).

Missing, believed Wounded and Prisoner of War

Aug. 22nd.—Reed 108592 Pte. 1st Cl. J. H. (Dulwich).

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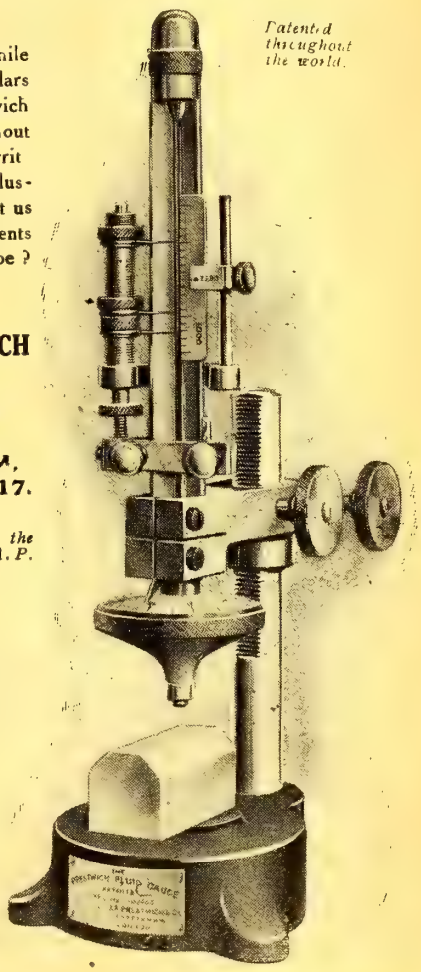
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PREVIOUSLY REPORTED MISSING, NOW REPORTED MISSING, BELIEVED KILLED.
AUG. 22nd.—Brooks 70405 Serjt.-Mech. W. E. A. (Cardiff); Lawder 38994 Serjt.-Mech. W. (Manchester).

MISSING, BELIEVED KILLED.
AUG. 22nd.—Bracy 23494 Serjt.-Mech. S. C. (Bristol).

MISSING.
AUG. 20th.—Pacey 220614 Air Mech. 1st Cl. J. W. (Orsell, Essex); Pheby 220141 Serjt. H. T. (West Ham).
AUG. 22nd.—Summers P/555226 Serjt.-Mech. J. D C. (Sydenham).
AUG. 28th.—Cullimore 225930 Cpl. C. H. (Redland, Bristol).

PERSONAL NOTICES.

NAVAL.

DEATHS.

BOOKER.—Maj. Charles Dawson Booker, D.S.C., R.A.F., (late R.N.A.S.) died on Aug. 13th of wounds received in action. He was the elder son of Mr. J. Dawson Booker and of Mrs. Booker, of The Cottage, Burnt House, Speldhurst, Kent. In June, 1917, he was awarded the Distinguished Service Cross for "special gallantry in the field on numerous occasions," and at the end of the same month was promoted to the rank of flight-commander. Maj. Booker also held the Croix de Guerre, and was a member of the Ordre de Leopold. He was 21 years of age.

TAYLER.—Lt. John Allingham Churchill Tayler, R.A.F., late R.N., who was killed on Aug. 7th, as the result of an aeroplane accident, was the younger son of Mr. and Mrs. A. Chevallier Tayler, formerly of Grove End Road, N.W. He was educated at Arnold House and Stonyhurst, joined the R.N. College, Greenwich, in November, 1917, continued his training in France and at Cranwell, and went out to the front in April, 1918.

ENGAGEMENT.

MAYNARD—PINN.—The engagement is announced between Maj. F. H. M. Maynard, R.A.F. (late R.N.A.S), only son of the Rev. John and Mrs. Maynard, of Winkfield Vicarage, Windsor, and Irene, second daughter of Dr. J. H. and Mrs. Pinn, of Southgate, Sleaford.

MARRIAGE.

PETTER—DOUGLAS.—On Aug. 13th, at the English Church, The Hague, Holland, Lt. Richard C. Petter, R.N.A.S., was married to Florence May Douglas by the Rev. H. Ratford. Present address: 3, Stadhouderslaan, The Hague.

MILITARY.

BRANDON.—Lt. Edgar Brandon (Obsr.), R.A.F. (late R.F.C.), who was killed in action on Aug. 11th, was the third son of the late Edgar Brandon and Mrs. Brandon, of Newlands, Clapham Road, Bedford. He was 27 years of age.

HORSLEY.—Capt. Oswald Horsley, M.C. (and bar), Gordon Highlanders and R.A.F., who was killed on Aug 10th whilst flying in England, was the younger son of the late Sir Victor Horsley, F.R.S., and of Lady Horsley, 10, York House, Kensington. He was 25 years of age.

He was born in 1893, and educated at Bedale's School, Petersfield, and Christ Church, Oxford. War broke out while he was at the University, and he joined the Artists' Rifles at once. He went to the front with his battalion, but in November of the same year was given his commission in the Gordon Highlanders. Three times wounded, he was mentioned in despatches and awarded the Military Cross. The third time he was wounded the injury prevented further service with the infantry, but he joined the R.F.C. in August last year, and gained his wings in December. Capt. Horsley went to France, and was promoted flight commander, but a month ago came home for service at an aerodrome in the Southern Counties. When at Christ Church Capt. Horsley took up rowing with great enthusiasm. He rowed for his college in the Mays at Oxford and in the Ladies' Plate at Henley in 1913 and 1914 and in 1913 rowed in the O.U.B.C. trial eights. Capt. Horsley was awarded a bar to the Military Cross for his work at the front with the R.A.F.

KIRWAN.—Lt. Laird Kirwan, South Lancs. Regt., attd. R.A.F., who was killed whilst flying on duty on Aug. 20th, after four years' service, was the only son of John and Caroline Kirwan, of 10, Lower Grosvenor Place, S.W., and 84, Hatton Garden. He was 24 years of age.

KEMPE-ROBERTS.—Lt. J. A. C. Kempe-Roberts, R.F.C., has been missing since March 10th. He started from Sheffield at 12.25 p.m. for Bekesbourne, near Canterbury. Neither he nor his aeroplane have been seen since, though the day was fine and Mr. Kempe-Roberts was a skilled pilot.

The first hint of an accident was in a telegram sent to his fiancée, at Chiswick, inquiring for information of his whereabouts. His friends were unable to throw any light on the mystery. His brother officers communicated with all the aerodromes, from which search parties were sent out, but without result.

Maj. Brandon, who was in command at Bekesbourne, sent a letter in answer to requests for tidings, stating the efforts which had been made to find Mr. Kempe-Roberts, and adding: "Although the weather was perfect here, during the afternoon an extremely dangerous combination of circumstances sprang up in the neighbourhood of the River Couch, thick fog veering round from east to south-west. I fear there is very little hope, though we have not relaxed our vigilance."

Mr. Kempe-Roberts enlisted in the Army Pay Corps at Hounslow at the outbreak of war, but, desiring to see active service, he transferred to the Royal Flying Corps, and eventually received a commission. He had made the trip to Bekesbourne several times, and had experience of night flying. It is thought unlikely that he was seized with sudden illness, as he was a man of exceptionally good health and physique. He was 23 years of age.

PHILLIPS.—Capt. Thomas Phillips, King's Own (R. Lanc. Regt.), attd. R.A.F., died on Tuesday in a military hospital in Wiltshire from severe burns received in a flying accident. He joined three years ago from Lancaster Grammer School, of which he was captain, having just won a classical exhibition at Cambridge. He served two years at the front, and transferred to the R.F.C. last November. He was the elder son of Mr. John Phillips, hotel proprietor, Lancaster.

ROYLE.—Capt. and Flt. Comdr. Leopold Victor Arnold Royle, M.C., R.A.F., who was killed in action on Aug. 17th, was elder son of Mr. Arnold Royle, C.B., and of Mrs. Royle, of Albany Lodge, Esher. He was graded flight commander in March of this year.

RYLANDS.—Lt. and Instr. Peter Wolferstan Rylands, R.A.F., whose death was announced recently, was the eldest son of Mr. and Mrs. Thomas Kirkland Rylands, of The Down House, Tockington, Glos., and was educated at Durnford and Marlborough, and obtained his commission in the R.F.C. in July, 1917, becoming instructor in Nov. of that year. He was killed while leading his squadron in firing practice on Aug. 9th. A correspondent writes:—"From the first he was unswerving in his determination to join the R.F.C. He was so successful as an instructor that, though he repeatedly asked to be sent to the front, he was too valuable to be spared."

TOLHURST.—Lt. Bernard Joseph Tolhurst, Duke of Wellington's Regt., reported missing on April 22nd, 1917, and now presumed to have been killed on that day. That he was shot down in action over the enemy lines is confirmed by a letter received by his parents from his pilot, Serjt T. K. Hollis (now a prisoner in Germany), dated July 15th inst., which thus describes the fight:—

"We (your son and I) left the aerodrome on Sunday afternoon at 3 p.m. with six other machines to do a photographic reconnaissance in the Arras district. At about 3.45 p.m. we commenced an action with a squadron of German aeroplanes far in excess of our own number. After a few minutes' fighting the enemy, with a great burst of fire, cut my two chief controls, thereby rendering my machine somewhat uncontrollable. A little later he was hit, and my engine almost stopped. By this time we were practically at the enemy's mercy, the engine having been hit, and I had only one remaining control, which was cut a little later. Your son, however, who had control of our machine-guns, was still fighting well despite severe wounds and weakness from loss of blood. As we neared the ground I saw we should not reach our lines, and tried to tell him, but found him unconscious. I tried to throw the guns over, but was unable to stand, having received four wounds. Shortly afterwards the machine struck the ground, and we were both thrown out. I got a crack on the head, which knocked me silly.

"When I came to, however, Mr. Tolhurst was lying a few yards from me. We were taken by the Germans into the nearest trench. Your son then recovered consciousness. We received medical attention in a dug-out. When the doctor had finished me, I was carried into an adjoining room. This doctor shortly afterwards came to me and said, 'Your friend, I am afraid, is going to die. He has been shot three times in the stomach.' Mr. Tolhurst was shortly afterwards brought in and laid beside me on a stretcher. He was conscious and a little delirious. He never rallied, and died muttering, 'Got one, got one!'"

Mr. Tolhurst was 25 years of age, and was the elder son of Mr. and Mrs. Bernard Tolhurst, of Southend-on-Sea and Ditton Court, near Maidstone. He was educated at Beaumont, and Stonyhurst, and Exeter College, Oxford. On the outbreak of war he joined the Inns of Court O.T.C., and received a commission in the Duke of Wellington's Regt. For some time he acted as brigade bombing officer, with the acting rank of captain. He went to France in the early part of 1916, and was in the Somme offensive. In 1917 he transferred to the R.F.C. as observer. He was a keen sportsman, and played cricket, football, and hockey for his schools and college.

* * *

Gunner A. T. Gowler, 245582, R.F.C., has been missing since March 22nd. Will anyone writing to hospitals or prisoners of war in Germany kindly inquire for news?—The information will be gratefully received by Miss Ransom, The Vicarage, Chatteris, Cambs.

MARRIAGES.

BARMINGHAM—OSBORNE.—On Aug. 22nd, at St. Peter's, Cranley Gardens, Lt. Harold Barmingham, R.A.F., late R.F.C., was married to Phyllis, eldest daughter of Maj. and Mrs. Arthur Osborne.

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BUNBURY—MURRAY.—Capt. Henry W. Bunbury, Suffolk Regt. and R.A.F., second son of Sir Henry Bunbury, Bart., and Lady Bunbury, of Stanney Hall, Cheshire, was married on Aug. 24th at St. James's Church, Piccadilly, to Margaret, daughter of Mr. R. A. Murray, of Pirnie Hall, the clergymen who officiated being the Rev. W. Wood, uncle of the bride, and the Rev. J. E. Evitt.

BIRTHS.

GOSSAGE.—On Aug. 24th, at 131, Earl's Court Road, S.W., the wife of Lt.-Col. E. L. Gossage, M.C., R.A.F.—a son.

HAYNES.—On Aug. 19th, at Oxford, the wife of Capt. C. C. Haynes, Devon Regt. (R.A.F.), of a son.

PHILLIPPS.—On Aug. 19th, at 34, Albert Road, Regent's Park, the wife of Capt. R. C. Phillipps, M.C., D.F.C., of a daughter. Australian papers, please copy.

STANLEY-CLARKE.—On Aug. 23rd, at Oaklands, Almondsbury, the wife of Maj. A. R. Stanley-Clarke, Dorset Regt. and R.A.F., of a daughter.

AIR FORCE.

DEATHS.

ASHFIELD.—Lt. Lionel Arthur Ashfield, D.F.C., R.A.F., who was reported missing on July 16th, is now reported killed. He was the second son of Charles and Ida Ashfield, of Hazelhurst, Frant, and was 20 years of age.

CLARKE.—Sec. Lt. Gerald Wilfrid Francis Clarke, killed in a flying accident near London on Aug. 23rd, was the third son of Sir Frederick W. A. and Lady Clarke, of Sutherland House, Cheniston Gardens, Kensington, and was born on Oct. 9th, 1899. He was educated at Quernmore School, Bromley, Kent, and at Dulwich College, where he was Serjeant in the O.T.C., and won the Master's Cup for 1918 awarded to the best platoon commander. In 1917 he won the Anstey Memorial Reading Prize and one of the prizes for the best piece of original work—a pianoforte solo, which he played at the school concert. On March 10th he joined the R.A.F., and received his wings as a pilot just two weeks ago.

DANIEL.—Flt. Cadet Harry Thomas Daniel, R.A.F., aged 18, was killed under singular circumstances connected with the accidental fall of an aeroplane in Wilts. At the inquest on Aug. 20th it was shown that the deceased was flying in a dual machine, acting as an observer to the pilot, a flight serjeant of considerable experience. On reaching an altitude of 2,000 ft. they found a thick mist, which was worse subsequently, and after being up for some time they made a forced landing to pick up their bearings. They again set off for the aerodrome, but the mist became still worse, and both agreed to make another landing to allow it to clear. In the course of this process the machine struck a tree, which drove her to earth nose down, with the result that the cadet, who was in the foremost seat, was instantaneously killed. The pilot was unhurt. The tail of the machine remained in the branches of the tree. The jury found a verdict of accidental death, and exonerated the pilot from blame.

LINDNER.—Lt. Philip Edward Lindner, R.A.F., who was killed in action on July 21st was the husband of Stéphanie Lindner, and youngest son of F. W. Lindner, Tiddington, Stratford-on-Avon.

OXENHAM.—Lt. Gordon Vincent Oxenham, R.A.F., was killed on June 27th while fighting two machines over the enemy's lines in Palestine, having previously brought one down. He was the third son of Mr. and Mrs. Humphrey Oxenham, of Sydney, Australia, and was educated at St. Ignatius College, Riverview, Sydney. He was 24 years of age. Mr. Oxenham had seen only six weeks of active service, and during that time had brought down four enemy machines.

PAYTON.—Lt. J. L. Payton, R.A.F., who was killed in action on Aug. 16th, was the fourth son of the late Hugh Payton, of Harborne, and Mrs. Payton, Maristow, Torquay.

RENTON.—Sec. Lt. E. T. Renton, who was killed in action on Aug. 14th, was the only son of Mr. and Mrs. G. H. Renton, Otterburn, St. James' Park, Harrogate. He was 18 years of age.

RENWICK.—Capt. Hugh Archibald, R.A.F., who was accidentally killed on duty, while on an experimental flight, second son of William Renwick, of Langgarth, Stirling. He was 27 years of age.

ROBINSON.—C. W. S. Robinson, Independent Air Force, R.A.F., died on Aug. 8th at a hospital abroad through an accident on service. He was second son of Mr. and Mrs. F. Robinson, Buxar, India, and was 22 years of age.

SCRACE.—Lt. John Scrace, R.A.F., aged 26, was killed in a flying accident in the East Riding of Yorkshire on Aug. 24th., his machine crashing to earth. Mr. Scrace was the only son of Mr. and Mrs. Scrace, of Beacon Lodge, Chatham, Kent. He was an Honoursman of Peterhouse and Ridley Hall, Cambridge, and had been in the Army three years.

SCRIBBINS.—Lt. Scribbins, R.A.F., was killed on Aug. 22nd while flying near a South Lincolnshire town. Owing to some cause not yet known his machine crashed from a great height. The accident was seen by his father, mother and sister, who were paying him a visit.

WOLSTENHOLME.—Lt. J. B. Wallace Wolstenholme, R.A.F., was killed whilst flying in a Yorkshire town. The machine crashed to earth and smashed the petrol tank, causing a fire which precluded his release. He was 23 years of age. His home address was Melrose Avenue, Cricklewood, N.W.

ENGAGEMENTS.

BEAUMAN—ST. CLAIR CUNNINGHAM.—An engagement is announced between Maj. Eric B. Beauman, R.A.F., younger son of Mr. and Mrs. Bentley Beauman, Seafield, Seaview, I.W., and Iris Muriel Usher, elder daughter of the late St. Clair Cunningham and Mrs. St. Clair Cunningham, Hedderwick Hill, Dunbar.

BOYS-ADAMS—ARBUTHNOTT.—The engagement is announced of Maj. W. Boys-Adams, R.A.F., third son of Mr. and Mrs. Lenesle Adams, Pendeford Hall, Wolverhampton, and grandson of the late Admiral Henry Boys, to Enid, second daughter of Mr. and Mrs. Carnegy Arbuthnott, of Balnamoon, Brechin, Forfarshire, and 34, Roland Gardens, S.W.

FARRER—ROBERTS.—A marriage has been arranged between Maj. Arthur W. Farrer, R.A.F., second son of Mr. John Farrer, of Ivydene, Crescent Road, Crouch End, and Ethel Florence, eldest daughter of Mr. and Mrs. Carlton Roberts, of Temple Grove, Golders Green, late of Wanstead, Essex, and will take place quietly on Wednesday, September 11th, at 12 o'clock, at St. Peter's-upon-Cornhill.

PAYNE—HARVEY.—The marriage arranged between Lt. Rawdon S. Payne, R.A.F., and Miss Sylvia Harvey will take place at St. Paul's, Knightsbridge, on Thursday, Aug. 29th, at 2. No invitations will be issued, but all friends will be welcome at the church and afterwards at 38, Rutland Gate.

MARRIAGES.

LISTER—WILKES.—On Aug. 22nd, at Tewkesbury Abbey, Maj. Thomas Vaughan Lister, R.A.F., was married to Doris Winifred, only child of Mr. and Mrs. G. F. Wilkes, Townshend House, Sedgley, by the Rev. A. S. Lister, M.A., father of the bridegroom, assisted by the Rev. F. Smith, M.A., Vicar of Tewkesbury.

STANSMORE—WILKINS.—On Aug. 20th, at St. Mark's Church, Salisbury, Capt. Reginald Stansmore, R.A.F., son of Inspector of Machinery H. C. Stanmore, R.N. (retired), was very quietly married to Dorothy Florence, daughter of Mrs. E. F. Wilkins, late of "Riverside," Ware, by the Right Rev. Bishop Joscelyne, D.D.

BIRTHS.

HAKE.—On Aug. 24th, 1918, at Kingslea, nursing home, Mulgrave Road, Sutton, the wife (*née* Hicks) of Lt. G. R. Hake, R.A.F.—a son.

MASON.—On Aug. 20th, at St. Margaret's, Gravesend, the wife of Lt. H. S. Mason, R.A.F.—a daughter (Doreen Helen).

SPICER.—On Wednesday, Aug. 21st, at 2, Beaumont Street, W., the wife of Colonel Malcolm Spicer, R.A.F. (40, Buckingham Mansions, Hampstead, N.W.), of a daughter.

* * *

Information of Lt. Lewis Gertling, R.A.F., who was reported missing on Aug. 8th, is urgently desired by his wife.—Empress Club, Dover Street, W. Tel., Regent 220.

* * *

Anyone who can give information regarding Lt. I. L. Roy, R.A.F., (of Indian extraction), who was brought down whilst flying on July 22nd, is urgently requested to communicate with Mrs. Roy, 67, FitzGeorge Avenue, West Kensington, W.14.

* * *

Lt. Hugh Tussaud, R.A.F., who was recently missing after a flight over the German lines, is now reported to be a prisoner of war and slightly wounded. He is a son of Mr. John Tussaud.

FOREIGN COMMUNIQUES.

FRANCE.

AUG. 20th.—German aeroplanes bombarded Nancy last night. Six persons are reported killed and 20 injured among the civilian population.

ARMY OF THE ORIENT.—British aircraft bombed trains and convoys in the region of Seres.

AUG. 21st.—Yesterday, notwithstanding the unfavourable weather and low clouds, our pilots were very active. Nine enemy aeroplanes were put out of action, and three captive balloons were set on fire.

Forty-one tons of projectiles were dropped in the daytime from a height varying between 150 and 1,500 ft. on concentrations of troops and convoys in the region of Cuny, St. Paul aux Bois, Juvigny, Chavigny, Crecy au Mont, and the passages of the Ailette. Many tens of thousands of bombs were dropped on other objectives

During the night of August 20th-21st we continued to attack with bomb and machine gun the bivouacs and passages of the valley of the Ailette.

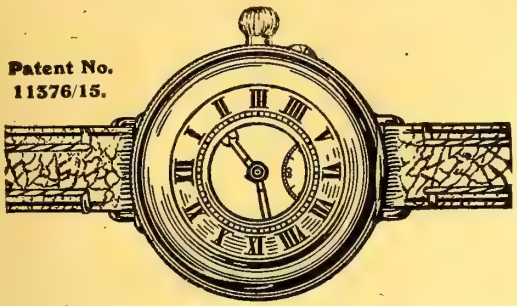
In addition, 23 tons of projectiles were dropped on the stations of Mézières, Amagne, Lucquoy, Chatelet-sur-Retourne, Conflans, and Amanvilliers. The station of Thionville received four tons of explosives. Altogether 64 tons of projectiles were employed, with excellent results.

ARMY OF THE ORIENT.—A French aviator shot down an enemy aeroplane south of Prilep.

AUG. 22nd.—On Aug. 21st our aviators brought down or put out of action 17 enemy aeroplanes, set six captive balloons on fire, and repeatedly caught retreating German troops under machine-gun fire in the region of Lassigny and between the Oise and the Aisne.

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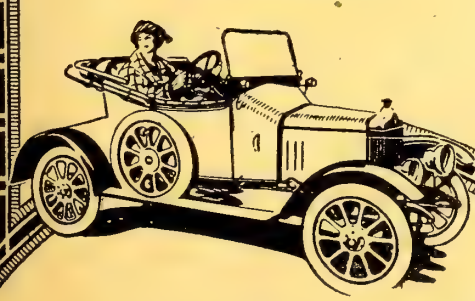
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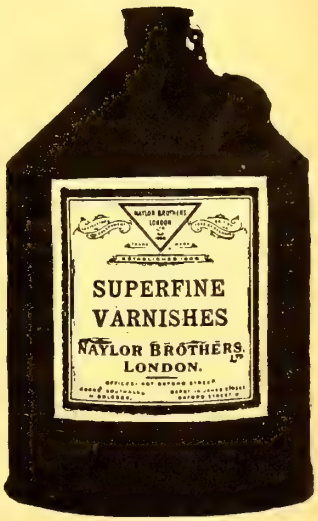
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the regions of Chauny, Margival, Vauxaillon, and Ainzy-le- Château, and by night 28 tons were dropped on the railway stations of Thionville, Conflans, and Mézières, as well as in the battle zone. Numerous hits on objectives and fires were observed on the railway station of Conflans, Ham, Cuiscard, Chauny, Thionville, Thiaucourt, and Pontavert.

During the days of Aug. 19th, 20th, and 21st our observation machines did a considerable amount of work during the battle, in spite of atmospheric conditions which were often unfavourable, and notwithstanding the attacks of enemy aviators, who endeavoured especially to prevent our infantry aeroplanes from carrying out their reconnaissances and from marking the lines.

During the night of the 21st the Germans bombarded Dunkirk with heavy shells. Seven civilians were killed and one was wounded.

Army of the Orient.—In spite of the bad weather, British aviators bombarded the region west of Demirhissar.

Aug. 23rd.—Favourable weather yesterday enabled our pilots to carry out important work.

Our observers, with their customary audacity, made numerous reconnaissances far into the enemy lines. In particular, the photographic missions brought back more than a thousand exposures from their expeditions.

Our chasing aeroplanes put out of action 14 enemy aeroplanes and set fire to nine captive balloons.

The day bombing squadrons dropped 18 tons of projectiles and fired thousands of cartridges on concentrations of troops and convoys in the Margival ravine, on the roads from Soissons to Chauny, and on Vauxaillon, Anizy Le Château, and Laffaux.

During the night our activity was not relaxed. Twenty-five tons of projectiles were dropped on the stations of Ham, Laon, and Anizy Le Château, causing fires, particularly at Chauny and at Guiscard, and blowing up a munitions depôt at Somettes Eaucourt. The stations of Mézières, Maison Bleue, Machault, and Pontavert were also bombed with excellent results.

Finally, a raid in great force was carried out against the very important aerodrome of Mars La Tour. As soon as the first bombs fell a great fire broke out in the aeroplane sheds and the huts of the staff. Aided by the light of the flames, the other aeroplanes were able most effectively to bomb the other hangars and huts, and also the *personnel*. Numerous machines were seen to be burning on the ground.

Altogether, 43 tons were employed in the daytime yesterday and last night.

Lt. de Romanet brought down on Aug. 22nd his tenth aeroplane.

Aug. 23rd.—Notwithstanding the bad weather, British aeroplanes bombarded enemy depôts in the Struma Valley.

Army of the Orient.—French aviators dropped 1,500 kilogrammes of explosives on the military establishments of Hudovo and Gradako. British aviators bombarded the region of Seres.

Aug. 24th.—Yesterday nine German aeroplanes were brought down or put out of action. A captive balloon was set on fire.

Our bombing aeroplanes dropped 12,300 kilogrammes (over 12 tons) of projectiles, and fired several thousand cartridges on the region of Anizy-le-Château, Brancourt, Landricourt, and the Mortier Forest, where our observation planes had reported a concentration of important enemy reserves and convoys.

Aug. 25th.—The very bad weather on the whole front yesterday hampered the work of our aviation service. Nevertheless, our chasing crews brought down four enemy aeroplanes. It was not possible to carry out any bombing raids during the day.

The weather having improved during the night our bombing squadrons immediately took the air. Eighteen thousand four hundred kilogrammes (about 18 tons) of explosives were dropped in the rear of the battlefield and on the stations serving it. The bivouacs in the region of Ognolles, Guiscard, the stations, railway lines, and concentration zones of Laon, Anizy Le Château, Jussy, Chauny, La Fére, Ham, Semide, Pontravert, and Guignicourt were subjected to a hail of projectiles. Numerous hits on the mark were registered, and fires broke out at Laon, Guiscard, and Guignicourt.

Army of the Orient.—French aviators brought down an enemy aeroplane to the west of Monastir, and British aviators bombarded the enemy cantonments in the region of the Struma.

GERMANY.

Aug. 20th.—Lt. Veltjens obtained his 29th, 30th, and 31st aerial victories; Serjt. May his 21st, 22nd, and 23rd; and Lt. Roeth his 22nd.

Aug. 21st.—Army Group of Gen. von Boehn.—Battle aviators took an effective part in repelling attacks. In nocturnal flights our bomb squadrons attacked successfully with bombs and machine-gun fire the adversary, who was densely concentrated in the villages and on the railways and roads.

Aug. 22nd.—Cologne was attacked shortly after 1 o'clock this morning by several aviators. Some 10 bombs were dropped, five persons being killed and two badly injured. Not inconsiderable damage was done to private property, but there was no military or material damage.

Aug. 23rd.—Lt. Udet obtained his 57th and 58th aerial victories.

During air-raids on the homeland, according to reports received up to the present, seven machines out of the enemy squadron of ten aeroplanes which attacked Karlsruhe were destroyed by our chasing-planes.

Aug. 24th.—Lt. Udet achieved his 59th and 60th aerial victories. During the past few days Lt. Laumen has achieved his 25th and 26th aerial victories. Serjt.-Maj. Doerr won his 22nd and 23rd, and Ober Lt. Auffarht his 22nd. Ober Lt. Greim and Ober Lt. Buechner won their 20th aerial victories.

Aug. 25th.—Our bombing squadrons, during the night of Aug. 24th-25th, threw on the harbour works, railway stations, military works, and camps of the enemy 75,000 kilogrammes (about 75 tons) of bombs.

AUSTRIA.

Aug. 22nd.—Albania.—A squadron of Austro-Hungarian and German aviators, consisting of military and naval forces, attacked the enemy aerodrome establishments near Avlona. Numerous fires were observed. Our aeroplanes returned in their entirety.

Aug. 23rd.—An Austro-Hungarian aerial squadron undertook a successful bombing attack against the Italian flying ground near Mestre (near Venice). Otherwise there have been no events of importance.

Aug. 24th.—On the night of the 22nd air raids were made on Bozen and Gries by Italian aviators. The enemy dropped more than 30 bombs, killed several of the inhabitants, and damaged a hospital.

Aug. 25th.—The bombing attacks of our aviators against Valona are continuing.

ITALY.

Aug. 21st.—Aerial activity was greatly hindered by atmospheric conditions. Four hostile machines were brought down.

Aug. 22nd.—Italian aviators successfully bombarded objectives in Sugana Valley, and dropped 2,000 kilos (two tons) of bombs on an aviation camp to the west of Meduna torrent, causing conflagrations. Five hostile machines were brought down by our own and Allied aviators.

Aug. 23rd.—Last night our aerial activity was intense; 7,000 kgs. (seven tons) of bombs were dropped on enemy aviation camps and railway establishments were bombarded successfully. Hostile aircraft

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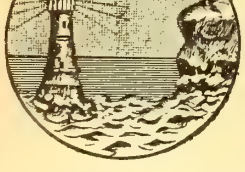
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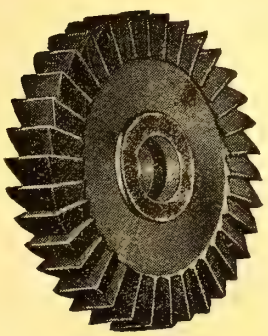
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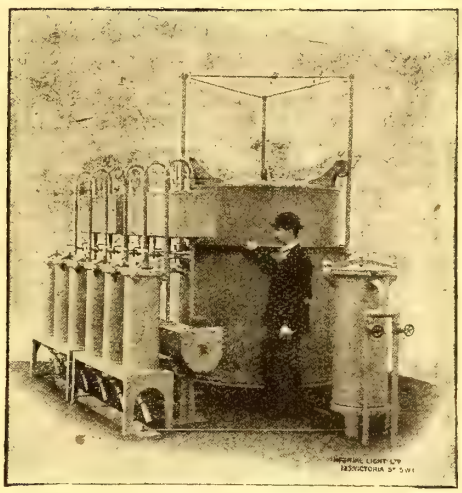
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dropped bombs on Treviso, wounding a child and causing slight damage to buildings. An enemy machine which was hit fell in the sea to the south of Venice and was captured. During the day eight hostile planes were brought down in air fighting.

Aug. 24th.—Last night our aeroplanes effectively bombed enemy aviation camps in Lagarina Valley and in the Friuli plains. (The wireless version of the above has the addition :—"Five hostile aeroplanes were brought down in air fighting.")

Aug. 25th.—Last night our aeroplanes again dropped about 4,000 kilogrammes (four tons) of bombs on enemy aviation camps in the Friuli plain and Lagarina Valley, causing large fires. Hostile machines dropped bombs on the city of Padua, causing slight damage to buildings, but no casualties.

Our aviators have successfully bombed the aerodrome near Valona.

U.S.A.

Aug. 21st.—Yesterday our aviators successfully bombed the railway at Flabeuville. All our machines returned.

Aug. 22nd.—North-west of Toul one of our aviators shot down a hostile machine.

On Aug. 21st and 22nd our aviators successfully bombed the railroad yards at Longayon, Audon-le-Roman and Conflans. Three and a half tons of bombs were dropped, and many direct hits were observed. All our machines returned.

Aug. 23rd.—Our aviators successfully bombed the railroad at Conflans. All machines returned.

BELGIUM.

Aug. 22nd.—A German balloon was set on fire by one of our aviators.

Aug. 24th.—Lt. Coppens brought down, in flames, two enemy balloons, these making his 26th and 27th victories.

TURKEY.

Aug. 20th.—During the night of Aug. 19th-20th enemy aeroplanes attacked Constantinople without causing any damage. Some persons of Italian nationality were slightly wounded.

Aug. 25th.—Two enemy air squadrons attacked Constantinople on Wednesday night.

AIR RAIDS INTO GERMANY.

An agency telegram to the Dutch Press says: "Frankfort and its environs were attacked on Aug. 21st at noon. A number of bombs were dropped which, so far as can at present be ascertained, caused only material damage."

Amsterdam, Friday.—The "Nieuwe Rotterdamsche Courant" learns that Cologne was attacked on the night of Aug. 21st by Allied aviators, and that some bombs were dropped, inflicting casualties and causing material damage.

ANOTHER R.A.F. REGATTA.

On Saturday, Aug. 31st, by permission of Lieut.-Colonel S. Janson, Officer Commanding the M.T. Depot, Royal Air Force, will hold a regatta on the Molesey Course, in aid of the British Red Cross Society and to the establishment of a bathing club.

The usual aquatic contests will take place during the afternoon.

A grand concert will take place at Hurst Park at 8 p.m., to which various well-known artistes will kindly lend their services, admission prices being 6d. to 5s. Tickets for concert and lawn may be obtained at the Karsino, the Thames Hotel, the Mitre Hotel, and at the gate of the depot.

The lawn of Garrick Villa, opposite the winning-post, has been lent by the owner; admission, including tea, being 7s. 6d.

All communications should be addressed to Lieut. Birkett, R.A.F., Hurst Park, Molesey.

R.A.F. PRISONERS' PROFIT.

A note from York House, Kingsway, intimates, with reference to the Supply Department Sports, held at Queen Club on Aug. 3rd, that the total receipts from all sources amount to the sum of £600, and a cheque for that amount is being handed to the Royal Air Force Prisoners of War Fund. All who contributed to the success are asked to accept the thanks of Brigadier-General Alexander and the Committee.

A MARTINSYDE HOLIDAY.

The employees of Martinsyde, Ltd., were blessed with perfect weather for their sports on Aug. 24th, which were held at the Woking sports ground, about a mile from the firm's works.

Prior to the sports the directors of the firm entertained a number of guests to lunch in the board-room, and the hosts are to be congratulated on the fact that as there were no speeches after lunch nobody's pleasure was spoilt by the prospect of having to make a speech.

The programme was an immensely long one, but interest never flagged, owing to the high efficiency of the stewards of the meeting, who were not content to run an event on the heels of the preceding one, but generally had two or three events going on at the same time. The promoters of the meeting seem to have collared all the available athletic talent for many miles round, for the running events were of exceptionally high quality, a number of overseas soldiers taking part therein, among them being the short-distance champions of New Zealand and of South Africa. The New Zealanders in particular gave everybody an excellent impression of their countrymen in general, being magnificent specimens of athletic manhood.

The open tug of war competition aroused the keenest interest, and was finally won by a team of the Irish Guards, who beat a Roehampton Kite Balloon team, who in turn beat a team from the Royal Aircraft Establishment at Farnborough in the semi-final. Other teams came from Lovat's Scouts, an Officers' Cadet unit, and a team of Sappers, besides various aircraft teams. The women's tug-of-war caused almost as much interest, the Martinsyde Company's own team being already famous for this class of competition, and having to compete against teams from Tarrant's, the National Shell Factory, and various others.

Concerts were given at various parts of the ground, and a South African band performed excellently in the middle of the ground. Particular credit is due to the Martinsyde Orchestra, which is one of the best orchestras of its size which one has heard. Judging by the extremely high quality of the orchestra, the conductor and trainer is evidently a musician of a high order.

Mr. Handasyde happened to be away on a well-earned holiday, but his colleagues, Mr. H. P. Martin, Mr. Hamilton Fulton, and Mr. T. B. André, together with those two pillars of the Martinsyde establishment, Messrs. Trott and Sherborne, worked indefatigably during the afternoon for the pleasure of the numerous guests. All deserve the heartiest congratulations.

THE GRAHAME-WHITE SPORTS.

In ideal weather, and watched by an interested concourse of several thousand people, including representatives of the Air Ministry and a large number of wounded soldiers, the first annual sports of the Grahame-White Company took place on Saturday afternoon, Aug. 24th, at the London Aerodrome. In a long and varied programme, which was enjoyed equally by competitors and spectators, and reflected the greatest possible credit on those officials of the Recreation Association who organised it, the most conspicuous features, probably, were the admirably close racing in the 100 yards, the vigorous contests which took place both in the heats and final of the tug-of-war, and the really exciting finish of the cycle race—won very cleverly from scratch by G. W. Turner, who has had the distinction also of being a winner at Stamford Bridge.

Among the incidental enjoyments of the afternoon were the admirable playing of the Grahame-White Orchestra, and the series of impromptu contests for wounded soldiers, into which they threw themselves with the greatest zest and good humour. These included a tug-of-war, a three-legged race, and a hat-trimming contest. Mrs. Grahame-White acted as a discriminating and expert judge in this last event, which caused hearty amusement, while Mr. Grahame-White, selling by auction the three winning hats, succeeded through his eloquence in obtaining £17 17s., which will go towards the fund for adding a new wing to the local hospital.

The Grahame-White aeroplanes which circled the sports ground during the afternoon were also carrying passengers in the interests of charity.

The prizes, which make a very handsome collection, will be presented to the successful competitors by Mrs. Grahame-White on the occasion of a special concert which is to be held in the new mess room on the evening of Aug. 30th.

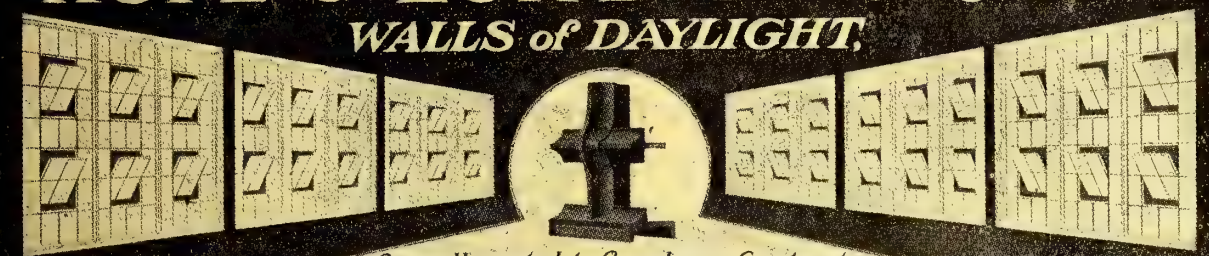
A NEW BOOK.

Capt. H. Barber, R.A.F., the seventh edition of whose "Aeroplane Speaks" appears this week, 8s. 6d. net, has written a volume of adventure, reminiscence, and reflection entitled "Airy Nothings." It will be published shortly by McBride, Nast, and Co., at 3s. 6d. net.

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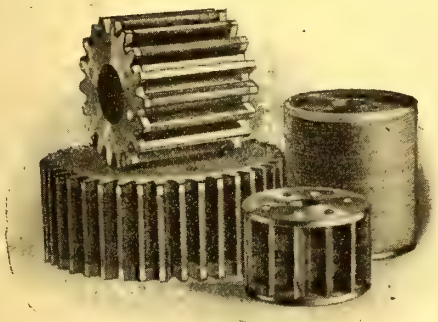
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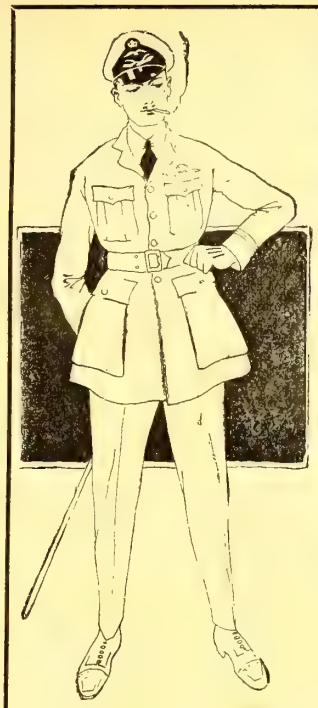
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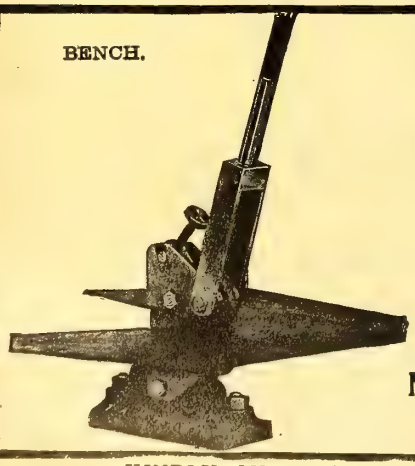
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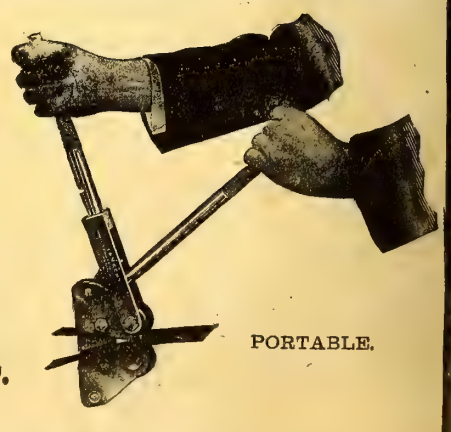
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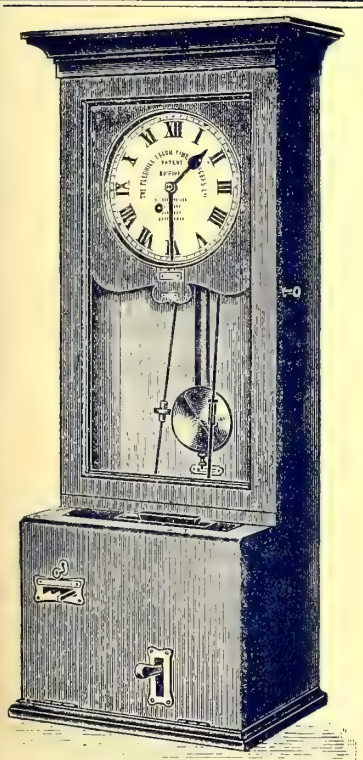


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Printed for The Aeroplane and General Publishing Co., Ltd., by Bonner & Co., The Chancery Lane Press, Rolls Passage, London; and Published by The Rolls House Publishing Company, Ltd., at Rolls House, Breams Buildings, London.

THE AEROPLANE

Edited by C. G. Grey

WEDNESDAY, SEPT. 4, 1918

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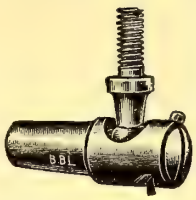
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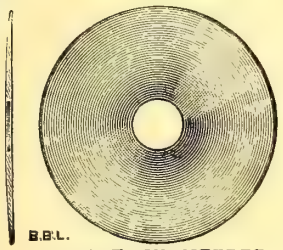
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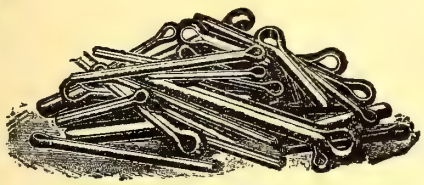
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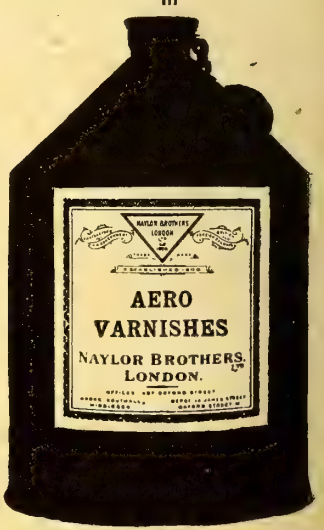
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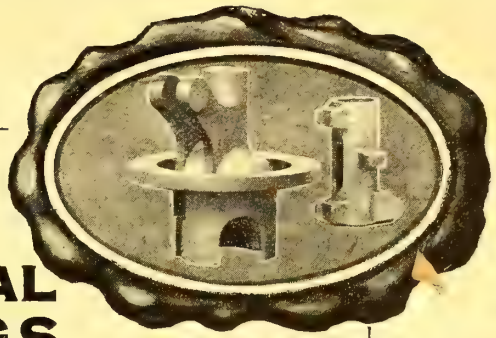
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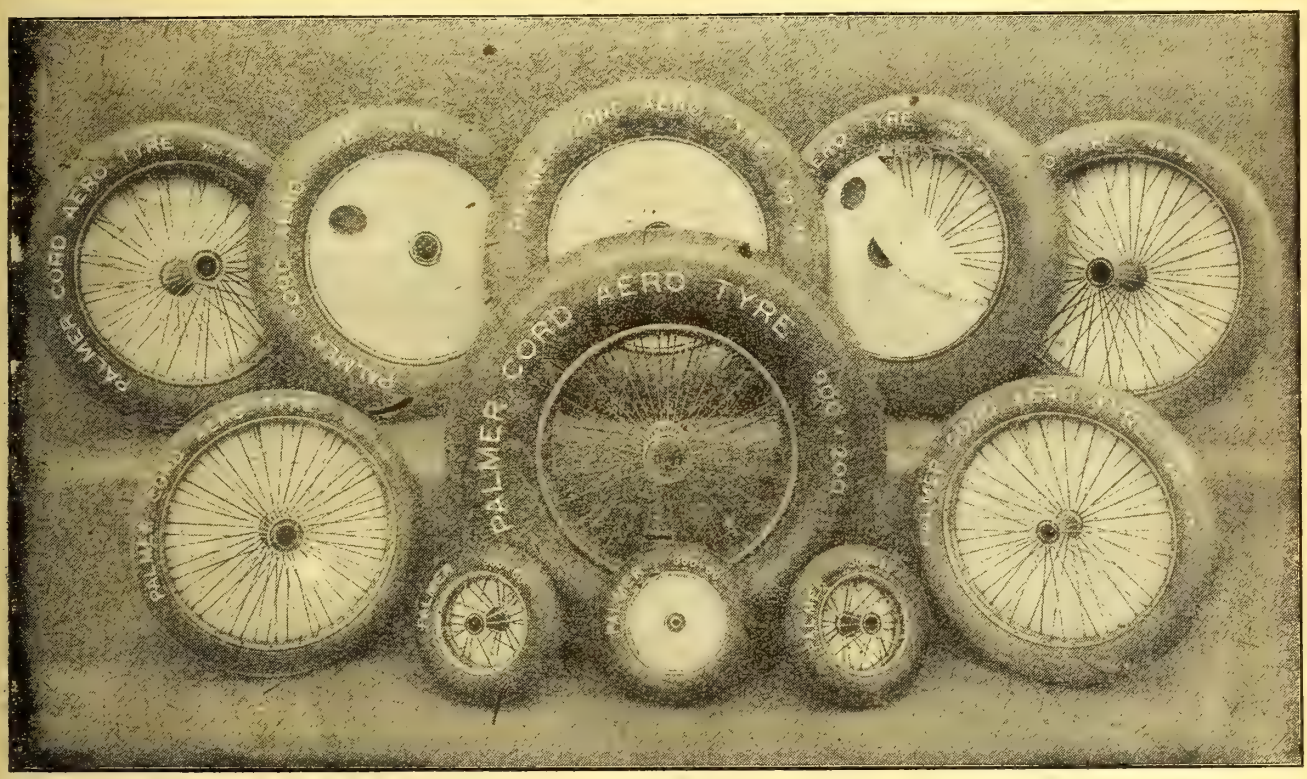
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300×60	16	111.12	25.4	Central	700×100	33	150.	38.09	Central	800×150	†41	185.	55.	Central
,,	17	72.39	12.7	Central	,,	77	178.	44.45	132/46	,,	82	185.	55.	135/50
450×60	30	89.	31.75	Central	,,	92	185.	55.	135/50	,,	85	185.	55.	Central
575×60	21	160.	28.	Central	,,	95	185.	55.	Central	,,	106	185.	47.62	135/50
,,	34	150.	31.75	104/46	,,	96	178.	55.	132/46	,,	†205	185.	60.32	Centra
,,	111	150.	38.09	104/46	,,	99	178.	38. 89	132/46	1000×150	97	250.	65.4	Central
650×65	78	178.	44.45	132/46	,,	112	150.	40.	Central	,,	102	185.	55.	125/60
,,	79	178.	44.45	Central	650×125	119	178.	55.	132/46	,,	201	185.	60.32	125/60
,,	100	178.	38.09	132/46	750×125	33	150.	38.09	Central	900×200	107	185.	55.	Central
,,	101	178.	31.75	132/46	,,	77	178.	44.45	132/46	,,	108	185.	55.	125/60
600×75	21	160.	28.	Central	,,	92	185.	55.	135/50	,,	120	185.	66.67	125/60
,,	34	150.	31.75	104/46	,,	95	185.	55.	Central	,,	202	185.	60.32	Central
,,	111	150.	38.09	104/46	,,	96	178.	55.	132/46	,,	208	185.	60.32	125/60
700×75	78	178.	44.45	132/46	,,	99	178.	38.89	132/46	1100×200	52	185.	55.	116/69
,,	79	178.	44.45	Central	,,	112	150	40.	Central	,,	57	185.	55.	Central
,,	100	178.	38.09	132/46	800×150	†36	185.	55.	135/50	,,	203	185.	60.32	116/69
,,	101	178.	31.75	132/46	,,	†40	185.	60.32	135/50	,,	204	185.	60.32	Central

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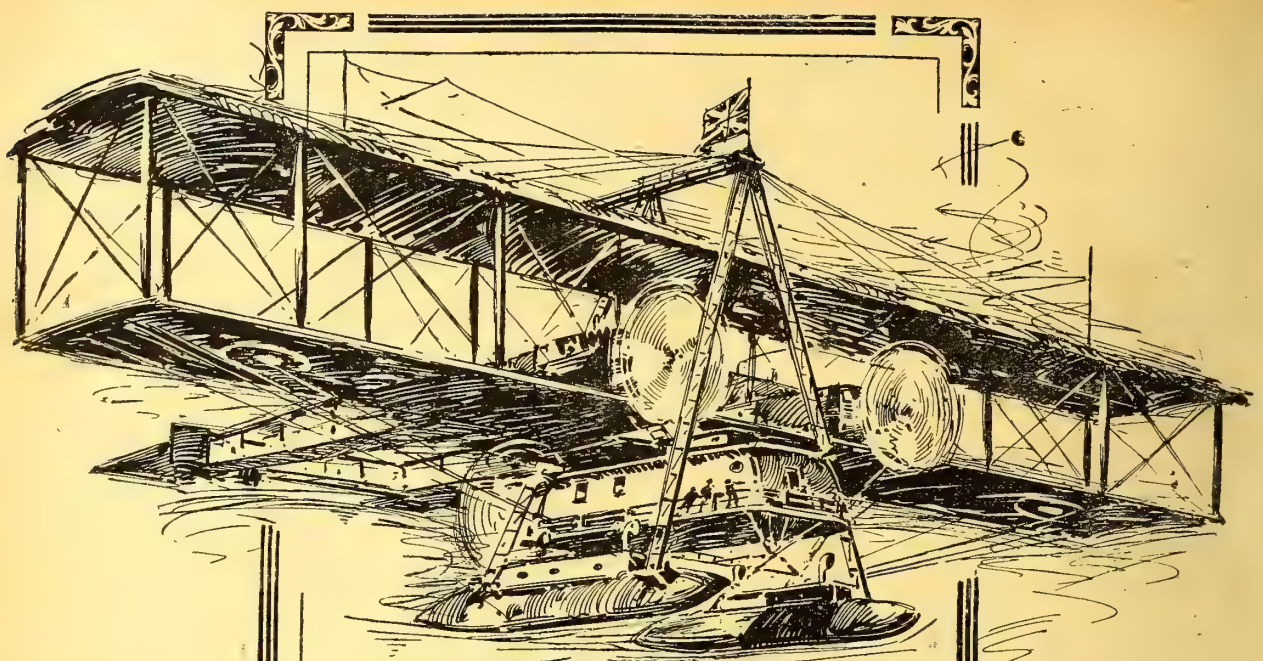
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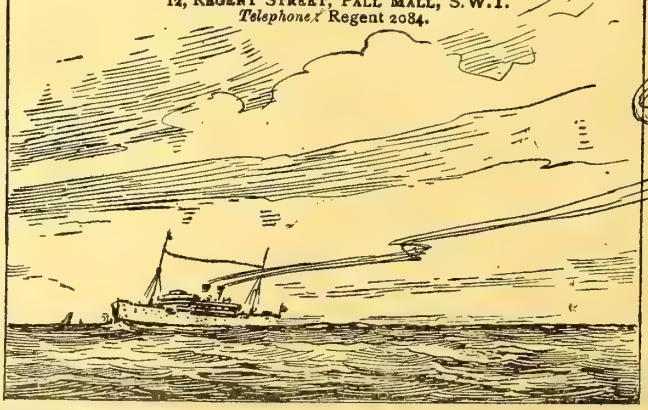
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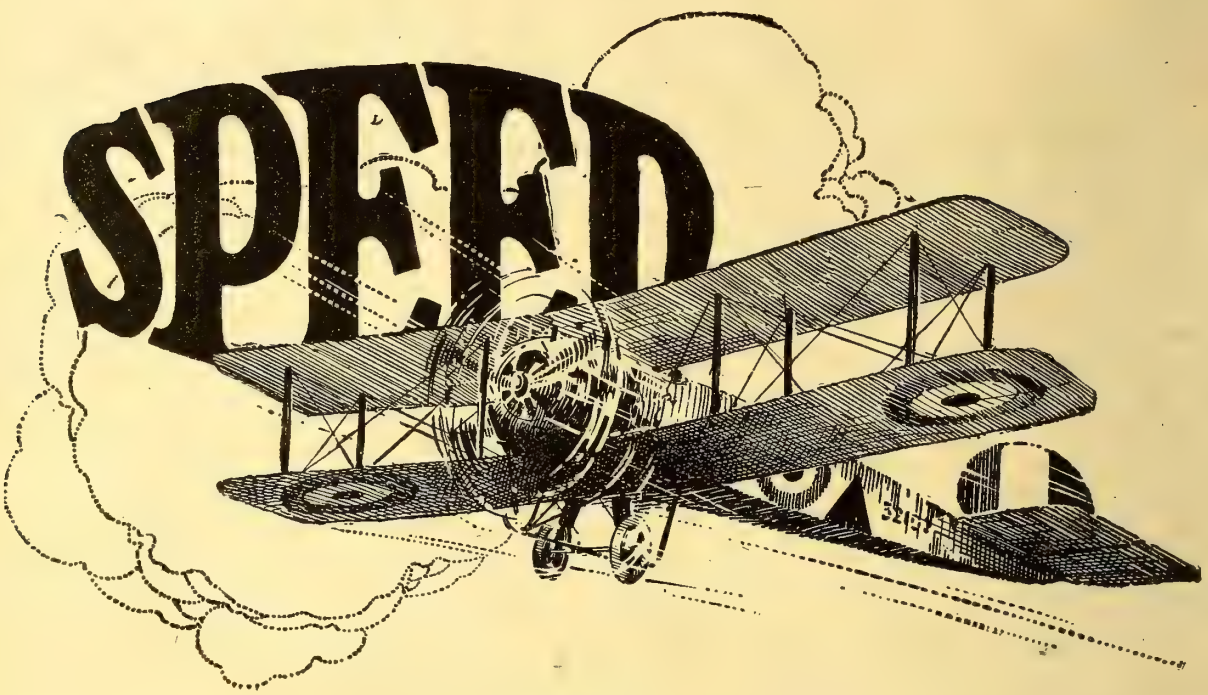
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The Editorial and Advertising Offices of "The Aeroplane" are at 166, Piccadilly, London W.1.
Telegraphic Address: "Aileron, London." Telephone: Mayfair, 5407.
Accounts, and all correspondence relating thereto, should be sent to the Registered Offices o The Aeroplane and General Publishing Co., Ltd., Rolls House, Breams Buildings, E.C.4.
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ON AIRCRAFT TRADE PARLIAMENTS.

It is a curious and interesting psychological fact that if you take an ordinarily, or even an extraordinarily, intelligent individual and elect or appoint him to a Board, or a Council, or a Committee, or a Representative Body of any kind, the chances are that he immediately becomes a component part of a collective congenital imbecile. Any Parliament in any country may be cited as in support of that statement, or any Bench of Magistrates, or even our own particular Air Council in its early days, which, despite the fact that it included several really brilliant individuals, did some astonishingly fatuous things—such, for example, as inventing the blue uniform, and trying to mix up the Naval and Military personnel. The reason is analogous to that which makes the marching speed of a regiment the speed of its slowest man.

There are, however, two safeguards against the production of such a state of affairs. One is the arrival of a dominant personality, before whose will all the rest of the members of the Representative Body bow. The other is the existence of a powerful minority in opposition, which forces the majority to use such intelligence as it may possess.

The former merely proves that a benevolent despotism is the ideal form of government. The latter proves that competition is good for trade. Which are the two basic principles of human life. A Coalition Government run on a policy of expediency is the antithesis of these principles, and, as exemplified in this unfortunate country, proves the benefits of both.

One gathers from common talk that there is some idea among certain big international financial interests in this country of bringing about a *coup d'Etat* and turning us into a republic. Which Heaven forbid! It is well to remember the philosophy of the great Mr. Dooley when he remarked to his familiar friend: "Hinnissy! In a Limited Monarchy the King does what the people tell him and thin blames himself. In a Republic the Prisidint does what he dam-well pleases and thin blames the people."

There is a world of sound sense in that humorous remark. Whether the President be removable at short notice, or whether he be firmly established for a term of years, he can be an absolute despot. Is any European monarch so absolute as that exceedingly benevolent despot, Mr. Wilson? Which might be construed into an argument in favour of becoming a republic, but for the fact that nothing and nobody in our own political history of late points to our being able to produce a reasonably efficient autocratic president, let alone a benevolent despot.

Taking our politicians by and large, on their public form, what we should get would almost certainly be a puppet president whose actions would be guided by strings operated by the International Financiers. Which would mean a German Peace, and a League of Nations working entirely in the interests of International Finance—which means Frankfort Judaism—unless or until our native Bolshevists broke loose and produced a state of anarchy, and ultimate starvation for the whole community. Russia to-day is the outstanding example of the results of a Frankfort Peace plot

The Need for Loyalty.

All of which are purely self-interested arguments, quite distinct from any sense of duty or honour which binds us to the service of our King, an amiable and intelligent ruler who is the ideal head of a limited monarchy, and holds the personal affection and respect of all reasonable people within his realm. If one could wish him to be other than he is, one would wish him to be more the autocrat and less the monarch limited by the British Constitution. One knows that the great majority of the people of the British Empire are Royalists by nature, and would rather devote themselves to the service of even the most headstrong King than obey the behests of a political gang who were known or suspected to be under the thumb of German Jew finance.

As one said in this paper some years ago, the best thing that could happen to this country would be a Military Revolution, in which some great soldier who had already won the confidence of the people would come forward and be a 20th Century Cromwell, with the great difference that he would declare himself Protector of King and Country instead of merely of the Commonwealth. A Royalist Cromwell would be a really great idea, and he would have all the best people, in all classes, with him to a man—and woman.

The political catch-phrase of Democracy—so-called—has it: "Government of the People by the People for the People." So be it! To-day the Army is the People, and the People is the Army—thanks to Conscription. Then, for Heaven's sake, let the Army govern the Country for the People, in the King's name! That, at any rate, would get rid of politicians whose only aim in life is to hold their jobs and make as much as they can out of them.

The Danger to the Industry.

All of which may seem to have little or nothing to do with Trade Parliaments in general and Aircraft Parliaments in particular. As a matter of fact, it has everything to do with them. For, if International Finance gets the upper hand, either now or when Peace breaks out, it will be the worst possible thing for the manual workers, and if Bolshevism or Syndicalism or unintellectual Socialism gets the upper hand, then good-bye to the future of the brain-workers and the manual workers as well. Even the most rabid Syndicalist must have the sense to see that without trained business

brain-workers at the top to direct operations there can be no work for the manual workers to do.

A factory run by the manual workers would be like a big ship run by the stoker ratings. There must be somebody on the bridge to direct the course, and that somebody must be a trained navigator who can do his job and take the stoker ratings safely into port, without bothering about how they do their jobs and without their bothering about how he does his job. A ship, whether a battleship or a liner, can only be run if all ranks and ratings have confidence in one another.

The same argument holds good in all walks of life, whether it concerns an Army or Air Force unit, or an industrial concern. And it is particularly cogent in relation to the Aircraft Industry, for our particular Industry is still in the making.

The Composition of the Aircraft Industry.

It must be remembered first and foremost that, apart from a very few hundreds of men who were building aeroplanes before the war, there is no such thing as an aircraft worker. Barring those few hundreds, many of whom in fact belonged and still belong to the old Trade Unions, the hundreds of thousands of men now working in aircraft factories are either trained men from other trades, or else trench-dodgers pure and simple. The trained men naturally owe allegiance to their various Unions, these pertaining to regular engineering, to woodworking, to tinsmithing, and so forth. They are not essentially aircraft workers. On the whole, they are good honest men, though perhaps too easily led astray by agitators.

The trench-dodgers have become skilled workmen within the narrow limits of their particular jobs, such as machine-minders or repetition woodworkers, and some of them who possess real mechanical ability have become skilled men in the truer sense. But if we had had Conscription before the war, as any sane nation would have had, they would all have been in the Army and the work at which they have become skilled would have been as well or better done by the older men who have been conscripted in their stead. And so we should have been saved the humiliating sight of seeing thousands of young men loafing about the streets or at places of amusement, while old crocks are struggling along under infantrymen's packs or idling their time away at menial work in the Army when they might be useful taxpayers.

The Truth About Coventry.

Naturally the really skilled men in the factories feel at the bottom of their hearts a supreme contempt for their trench-dodging shop-mates, though for Trade Union purposes they may rake them in as Unionists, despite their not having served their time to a trade. So far as one can recollect, it has never been made clear that this feeling was really at the bottom of the last Coventry strike.

What happened was that the skilled men, the tool-makers, machine-setters, and so forth were working on time rates and were drawing anywhere between £3 and £6 per week. The trench-dodgers, who were mere machine-minders on piece-work, were drawing anything between £5 and £15 a week. Naturally the skilled men kicked, because they knew that without them the machine-minders could do no work at all, for they would have no tools, and, if they had the tools, could not set their machines in working order.

Then, it appears, some intelligent firm or other which was keen on output started offering big wages to tool-makers and setters, and proceeded to rake in the pick of the skilled men of the district. You see, if one skilled man can make the tools necessary to keep 20 or 30 unskilled men busy, and those unskilled men draw in the aggregate between £150 and £200 a week in wages and produce perhaps £500 to £1,000 worth of output per week, it really matters very little to the employer whether that skilled man draws £5 or £15 a week. And, after all, the skilled man on whom that output depends is just as well worth his £10 or £15 a week as is the salesman or manager whose business skill manages to sell that output.

The skilled man, who is necessarily a man of brains, sees the sense of that argument perfectly well. But there is a certain class of employer, who is all too common, who cannot get out of his thick head the idea that a man who works with his hands is necessarily an inferior being and cannot be worth more than £3 or £4 a week, except purely on piece-work—in which case the employer can see his profit on each piece of work, and even then he tries to cut down the piece-work price so as to cut the man's earnings down to what he considers to be the manual worker's limit.

The result of the aforesaid offer of big wages to skilled men was that the less generous employers began to lose men, and their output began to drop—and also their profits. Then somebody pulled the appropriate strings, and some Department or other issued an edict forbidding the skilled men to go to the people who were offering the higher wages. Then the skilled men struck and threw the unskilled trench-dodgers out of work.

Which, after all, seems a very simple and human way of proving their own value. Personally, one is utterly opposed to strikes in war time, as it is disloyal to the King and to the Army to hold up the output of munitions, but, as the only alternative to striking seems to have been the mobbing of the meaner employers, or making hostile demonstrations before their houses after working hours—which might have led to rioting—possibly the strike was the lesser of two evils. In any case, it looks as if the men were right for once and the employers were wrong, as is so often the case.

The Recent Strikes.

The women's 'bus and tube strikes and the police strike are not very dissimilar instances of the meanness of employers, the last being the crowning example of the long-recognised fact that the Government, whose members are themselves grossly overpaid, is the meanest of all employers. The women won their point, and, despite the inconvenience which they caused, they had public sympathy entirely with them. If a woman does a man's work and does it as well, she ought to be paid as much for it.

In the case of the police, much has been written in the doped Press about their disloyalty, but under what was published one could discern the sympathy of the sweated journalist with the sweated policeman. Like the politicians, the average newspaper proprietor has not yet learnt that it pays to pay good pay to a good man.

How on earth the Government ever expected a policeman to be honest and keep himself clean and respectable on 30s. to 40s. a week in peace-time, plus a 12s. bonus in war-time, passes comprehension. Even the £1 bonus is far too little to assure honesty in the smaller things of life. It is not surprising that the venality of the policeman has been a stock joke for generations. The only surprising thing is that the police are honest in the bigger affairs.

A Curious Coincidence.

Even then, in some places, the police are not above suspicion. For example, the only time one has had burglars in one's house, during nearly 20 years as a

householder, was some 10 or 12 years ago, when on going away on business for 10 days the local police were notified that the house would be vacant during that period. Burglars arrived the day after the house was vacated, and afterwards it was fairly plainly hinted that if one offered a big enough reward the stolen goods would be "found." The goods being worth very little, no reward was offered, and they were not found.

The point is that, though one has left one's house empty for months at a stretch at other times, this was the only burglary, and it was the only time the police have ever been warned to look after the house. One may add that the house was not in London, but in a big English industrial city where the police are notoriously badly paid and the local employers of labour are ostentatiously affluent.

The reader can draw any conclusions he or she pleases, but one believes that if any ordinary human man is to be honest he must be paid sufficiently well to make it worth his while. And a manual worker should be paid so well that he willingly does an honest day's work, just as a policeman should be paid so well that he willingly avoids collusion with law-breakers. Incidentally, some motorists would regard it as a tragedy if the police were so well paid as all that.

The Benefits of Argument.

Now, all those strikes could have been avoided if only there had been fair and square meetings between employers and employed, where each side could state its case and meet the arguments of the others. And that is the basis of the Trade Parliament idea.

The Aircraft Industry particularly needs Trade Parliaments of its own in various districts, besides a National Parliament in London. There need be no fear of such Parliaments sinking to the level of the House of Commons and reaching a similar depth of imbecility, for in the Aircraft Parliament there would be constant keen opposition to sharpen the wits of both sides.

After a few rather stormy meetings the employers would begin to realise that the men are not merely living machines, but have quite a lot of brains, and the men would begin to understand that an employer may be almost human. A good deal of tact would be necessary, for the manual worker is always suspicious of the coat-wearing class. If the employer is civil, the workman thinks he is going to try and bribe him, and if the employer is not civil the workman refuses to talk to him. Nevertheless, the effort is worth making.

An Initial Difficulty.

The trouble appears to be that the aircraft employers' association, the Society of British Aircraft Constructors, commonly called the S.B.A.C., does not deal with labour questions itself, but is affiliated to the Engineering Employers' Federation, through whom it deals with such affairs. Likewise, as already explained, the em-



GETTING AHEAD AS USUAL.—A German Military Postal Service getting going with Military encouragement in preparation for Peace. And with a comparatively modern machine.

ployees in the aircraft factories do not belong to any aircraft workers' union, for no such thing exists, but belong to the A.S.E., or the Cabinetmakers' Union, or one or other of the unions pertaining to the many trades which contribute to the construction of aircraft.

It seems to be high time, however, that, Federation or no Federation, unions or no unions, the employers and employed in the Aircraft Industry should get together and arrange some scheme by which they can fix up their own arguments among themselves in a friendly way, even if they agree to refer to the Federation and the trade unions, as a kind of Court of Appeal, if they cannot agree among themselves.

Nationalising the Aircraft Industry.

It is said that one of the subjects to be discussed at the Labour Congress at Derby this week is the Nationalisation of the Aircraft Industry, on the grounds that aircraft are munitions of war, and that therefore they should not be made by commercial firms who would profit by the outbreak of war. Now, here is precisely a subject on which employers and employees in the Aircraft Industry could at once come to an agreement and bring their united weight to bear.

Nationalisation of the Aircraft Industry means not only death and damnation to the aircraft firms, but to aircraft workers it means loss of employment, and to the British Empire it means loss of the Command of the Air, which is now of more importance to our safety than the Command of the Sea.

We have already had some experience of a Government Aircraft Factory, and we know that it means stagnation in design and waste of public money. Which means inferiority in the air in the next war. Our present superiority in the air is entirely due, as Lord Weir has said in effect, to private enterprise, though one readily gives the Royal Aircraft Establishment credit for much valuable research work. Government dockyards, Government arsenals, and Government factories of all kinds are, by their very nature, inefficient, for they are free from the spur of competition. It was only continual agitation and competition which forced the Royal Aircraft Establishment to lessen its inefficiency as much as it has done.

There can be no employee in any aircraft factory who is such a fool as to be unable to see that the future safety of this country depends on our maintaining a big and efficient air fleet, nor can any be such a fool as to ignore the fact that there is also a great commercial future for aircraft. On these two points alone employers and employed should be able to find common ground for the formation of an Aircraft Industrial Parliament which would vote unanimously on the de-Nationalisation of the Aircraft Industry.

The S.B.A.C.'s Opportunity.

The employers in the Aircraft Industry are organised together in the S.B.A.C., the employed are not organised at all—as aircraft workers. It is, therefore, up to the S.B.A.C., as an organised body, to take the first steps towards forming a Parliament for the Industry, and to encourage the formation of an Aircraft Workers' Union with which they can discuss matters affecting the Industry as such.

The opportunity is open to the members of the S.B.A.C. to-day. It may not be open to them when peace has been declared. An International Financier's peace or a Bolshevist peace would effectually prevent the coming together of employers and employed as man to man. Even a complete victory over Germany in the field would not provide so good an opportunity as offers itself at the present moment.

The opportunity is now, here, to-day, while the best of the employers are united on one subject, the building up of a Great Air Fleet which will assure to this country in the future the Command of the Air. Will that opportunity be taken now or lost for ever?—C. G. G.

R.A.F. FASHION NOTES.

Passing through the Burlington Arcade the other day I happened to step into the *atelier* of one of those specialists in the art of dashing the haber who have made that *milieu* famous. Immediately on entering his electric portal I was confronted by a colour scheme which at once struck me as supplying the missing link in the R.A.F. *toute ensemble*. It is still a lamentable fact that the sealed pattern of the R.A.F. overcoat remains to be decided, and here was the *dernier cri* staring me *droit en face*.

In the *chiaroscuro* of the studio stood a sartorial dummy wearing on the knob which did duty for a head that chaste confection in pastel blue which now adorns the occiput of, alas, so few of our heroic airmen, and of, also alas, so many who are neither airmen nor heroic but live laborious days in wearing out their cerebral composition, and the business surface of their slacks, in the heated political atmosphere of what was once a leading co-operative palace in the Strand. It was this happy *locus* of the R.A.F. head—decoration in juxtaposition with the garments below it which gave me the great idea. For the body of the figure was clothed in a *peignoir* of the most artistic. The vulgar might call it a dressing-gown, but to my artistic eye it suggested all of the most desirable for the R.A.F. *paletôt*.

It, like the cap, was of a *nouveau art* shade. A delicate pastel creamy yellow, the colour of slightly over-due Devonshire cream—now, alas once more, disappeared for the duration. It was of a most superior sponge-cloth fabric. And for facings it had deep roll *revers* of white *moiré* silk, with especially deep cuffs of a similar *matériel*. The deep patch pockets bore lapels of the same, ornamented with *boutonnettes* of *mère de perle*, and there was a *ceinture* of thick white silk cord, arranged in the *façon monastique*.

Round where the neck of the figure should have been was a scarf of most exclusive design, in *soie de khaki*, with fringes of dark and light blue, and deep bands of the same colours *à travers* the ends. Worn *à la Berthe*, to fill in the howling hiatus between the *revers* of the *peignoir*, it completed a figure which would have filled with *jouissance* the *artistes* who created the R.A.F. costume, if indeed they had not been overcome by a *faillance de coeur* on seeing its surpassing beauty.

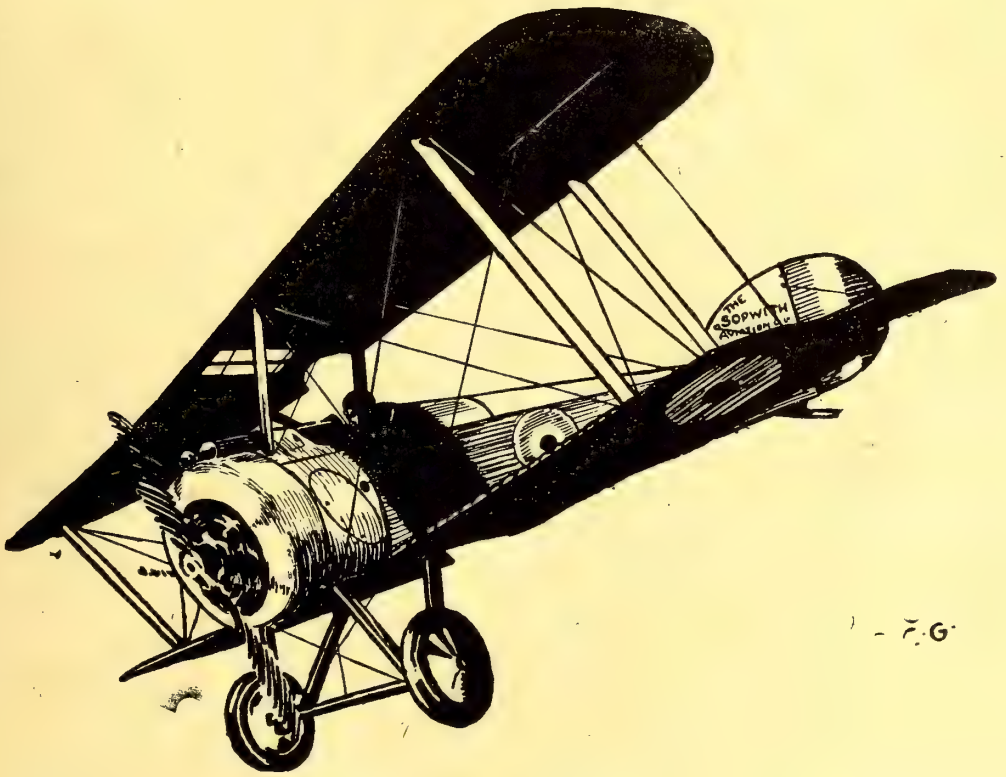
En bon verité it must have fulfilled the wildest dreams of those creative mentalities, for it outshone the most garish of *revue* costumes, the art colouring would assuredly have disclosed to the utmost the carelessness of any wearer who ventured near an oily aeroplane while embraced in these chaste vestments, and the absorbent surface of the *drap d'éponge* would have clung to every speck of dust in its vicinity. What more could the designers of the R.A.F. art-costume desire?

Figurez-vous à vous-mêmes the spectacle to be presented by a squadron of our super-birdmen drawn up for inspection in the *piazza* of the *Palazzo Bolo*, clad in the now familiar pastel blue, complete with golden bananas rampant, as fitted, wearing the cream *paletôt*, the left arm thrust into the sleeve and the rest of the garment draped gracefully from the right shoulder, *à la Housard Hongrois*, or the plaid *Ecossais*, leaving the right



The R.A.F. Boy: "What *am* I to wear?"

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21, RUE DU MONT THABOR.

arm free to wield the joy-stick so dreaded by the perfidious Hun, while the *soie de Khaki* scarf, with its ends of the historic R.F.C. colours, waved gallantly pennant-like in the breeze caused by the turbine action of the revolving door rotating rapidly in the stream of non-flying officers looking for further promotions.

Am I not correct *mes amis,* and *mes amies,* would not our heroes of the air be the envy of all our gallant twenty-two Allies? Do I not thus contribute, along with the Uniform Committee of the Air Ministry, to the winning of the Great World War? Am I not also entitled with so many others to the order of the C.M.G., seeing that St. Michael was the *as des as* of the Heavenly Host and that St. George of Cappadocia was an Army contractor?

Turning to more mundane matters, less of interest to *le vrai mondain,* sundry of my correspondents who merely fly against the enemy and are not on the "inside" are mightily concerned about the recent *ordre du jour* decreeing that the *pantalons* of our airmen shall be of "light blue tartan serge." They fear that this is only the *premier pas qui coute,* and that having created a special R.A.F. tartan, *sans doute* resembling a washed-out Black Watch tartan, the next step of the creative artistes will be to put the whole R.A.F. into Kilts specially designed by that famous *coutourier,* M. Calthrop, to act as a *jupe* when on the ground and as a parachute when descending involuntarily from aloft. *Pas de gêne mes copains,* tartan serge is merely a *façon de parler* of the weavers of cloth, and refers to the run of the threads and not to the colours, though, *sans trop dire,* it is indubitable that after but of the littlest duty with aeroplanes the pantaloons will become a cheerful piebald.

Another great alteration in Service adornments is foretold by those who penetrate the sacred portals of the Palazzo Bolo. Only a small time since it was ordained that officers must no longer wear gloves to hide the aristocratic *blanchesse* of their hands—the true mark of the *gentilhomme* on the *Etat Majeur* who does no work. Thus one may now distinguish the real staff-officer, despite the absence of "tabs," from the mere common war-pilot with his grubby paws. Now it is said that because some of the non-flying officers once did some work they cannot conceal the callosities caused thereby, and so in future mittens will be worn instead of gloves. In this way the well-to-do officers, late of Hatton Garden and Petticoat Lane, will be able to display their rings and yet conceal their palms—and anything that may happen therein.

But enough for the present, or our so-excellent *Controlleur de Papier,* M. Vernêt, may be angry. We will discuss later other matters of the *etiquette* of R.A.F. habiliments.—C. G. G.

STILL "PER ARDUA."

The old-timers of the Royal Flying Corps (Naval and Military Wings) have consoled themselves through all the recent changes caused by the evolution of the Royal Air Force with the idea that the whole business was in accord with the splendid R.F.C. motto, "*Per ardua ad astra.*" They were content to put up with their various hardships, provided always that ultimately the R.A.F. reached that high state of efficiency indicated by their old motto, which embraces the spirit of the American injunction, "Hitch your wagon to a star." Now there is a fresh blow in a horrible rumour to the effect that this last relic of their ancient respectability is to be taken from them, and that somebody or other is endeavouring to evolve a new motto, presumably to match the new uniform.

One sincerely trusts that there is no truth in this rumour, and one is inclined to disbelieve it, for it has always been accepted as a fact in the R.N.A.S. and R.F.C. that the old original motto, one of the most apposite and neatest ever evolved, was adopted for the R.F.C. by Maj. F. H. Sykes when the R.F.C. was first formed, and he was in command at Farnborough under Brig.-Gen. Henderson, and it therefore seems very unlikely that as Chief of the Air Staff he would willingly alter so thoroughly excellent a piece of his own early work. Possibly, however, such apparently unimportant, but actually very important, matters as mottoes do not come into the Department of the Chief of the Air Staff, and that therefore the C.A.S. knows nothing of the proposed change. If that be the case, one hopes that he and the other pioneers of British Service aviation will do their best to maintain the old motto along with as many of the old traditions as they can conserve in the midst of the present Bolshevistic changes.

If, of course, some weird political influence is bent on cutting the last link which connects the R.A.F. with its two glorious and historic parents, as may be the case in these days when politics outweigh all other considerations, perhaps one may suggest that the best alternative to the old motto is to adopt in letter and spirit Mr. Alfred Lester's famous lines, "I've gotta motter, 'Always merry and bright.'" The brightness would doubtless refer to the hardware on the blue uniform, and the merriness to the Lesterian attitude of mind of the people who are forced to wear it.

A CANADIAN R.N.A.S.

The "Times" reports that in order to assist in the defence of the Canadian coast, the formation of a Canadian Naval Service is being hastened. A commander of the Royal Air Force has been lent to Canada to organise the service.

STANDARD R.A.F. CLOTHS.

The following announcement was made by the War Office on Aug. 28th:—

R.A.F. Blue Cloths for Officers' Service Dress will shortly be available to tailors on the registered list under the P.A. scheme.

No tailor using these cloths may charge more than the following prices for the finished garment, exclusive of badges and badges of rank:—

Tunic	£7 10 0
Trousers	£3 5 0
Breeches (cloth strappings)	£4 10 0
British Warm (lined)	£7 12 6

The above prices are maximum prices and it should be possible for officers to obtain a tunic from the cheaper class of tailors at prices ranging down to £6 and other garments in proportion.

THE R.A.F. NURSING SERVICE.

The "Times" of Aug. 31st states that the new Royal Air Force Nursing Service is asking for nurses for its personnel, and has the special inducement to offer them, according to the "British Journal of Nursing," of honorary rank in the Air Force. Matrons-in-Chief will have majors' rank, matrons and superintending sisters that of captain, sisters will be lieutenants, and staff nurses second lieutenants.

Their uniforms will be of R.A.F. blue. The Matron-in-Chief will wear a dress of R.A.F. material, faced and braided, and a cape of R.A.F. blue. She will wear a bonnet of R.A.F. blue, the shape of which is not stated. Matrons will also wear a bonnet of R.A.F. blue, and, while on duty, muslin caps of the same colour. Superintending sisters and sisters will also wear dresses and capes of R.A.F. blue, but they will not wear the headgear of the older services; instead they will have a three-cornered summer hat of straw, and a felt winter hat, also three-cornered.

Waterproof caps of regulation material and design may be worn in bad weather in place of hats. Waterproofs may be worn when necessary, but they must be of the same colour as the uniform and of "trench coat" design.

Nurses desiring particulars of the service should apply to the Secretary, Air Ministry, Strand, W.C.2.

THE RE-SETTLEMENT OF OFFICERS.

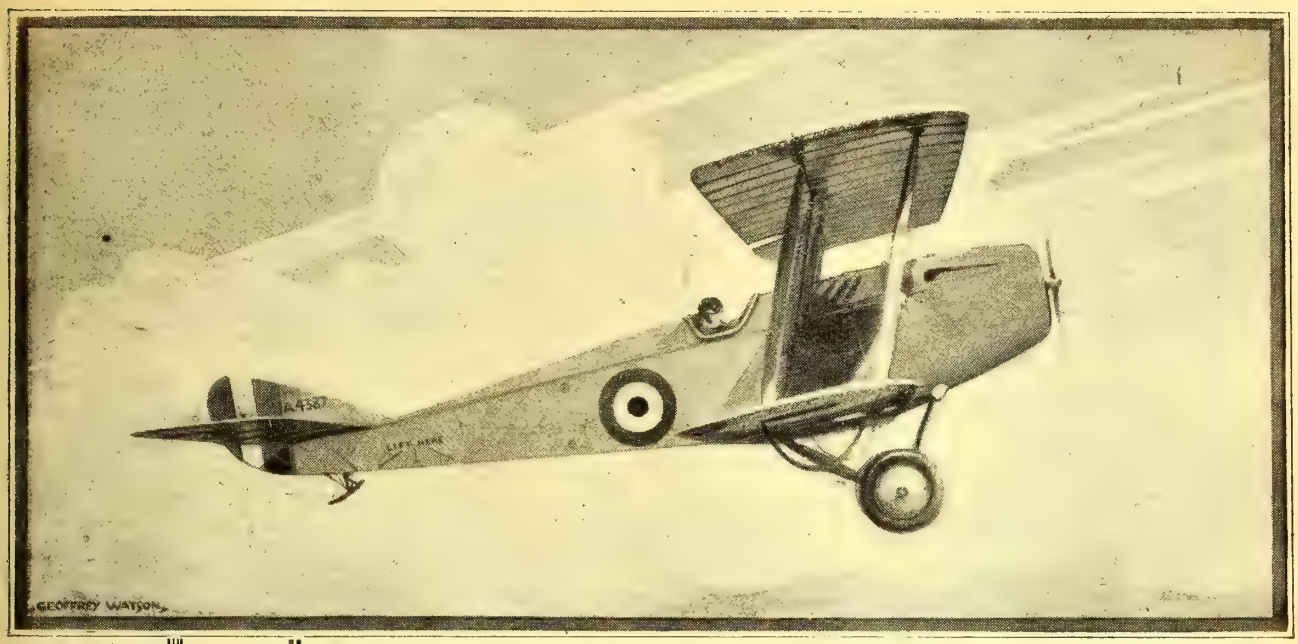
A Committee to be known as the Officers' Re-Settlement Committee has been appointed by the Ministry of Labour to advise as to the steps to be taken for the re-settlement in civil life of officers, ex-officers and men of similar standing both during the war and on the demobilisation of H.M. Forces, and, when necessary, to interview selected candidates, and advise and assist them in the choice of a career. The Committee will work in conjunction with the Appointments Department, which has recently been formed as a separate branch of the Ministry to deal with the above questions, and has its offices at Gresham House, Old Broad Street, E.C.2.

The Committee will also deal with the employment of disabled officers, and will include two representatives of the Ministry of Pensions, which is exercising its functions in regard to the employment of disabled officers through the Appointments Department.

The Committee is under the Chairmanship of Lord Burnham, and every endeavour has been made to make it fully representative of professional and business life and of the Government departments interested in the welfare of officers. The membership, which is not quite complete, owing to two or three nominations not yet having been received, is as follows:—

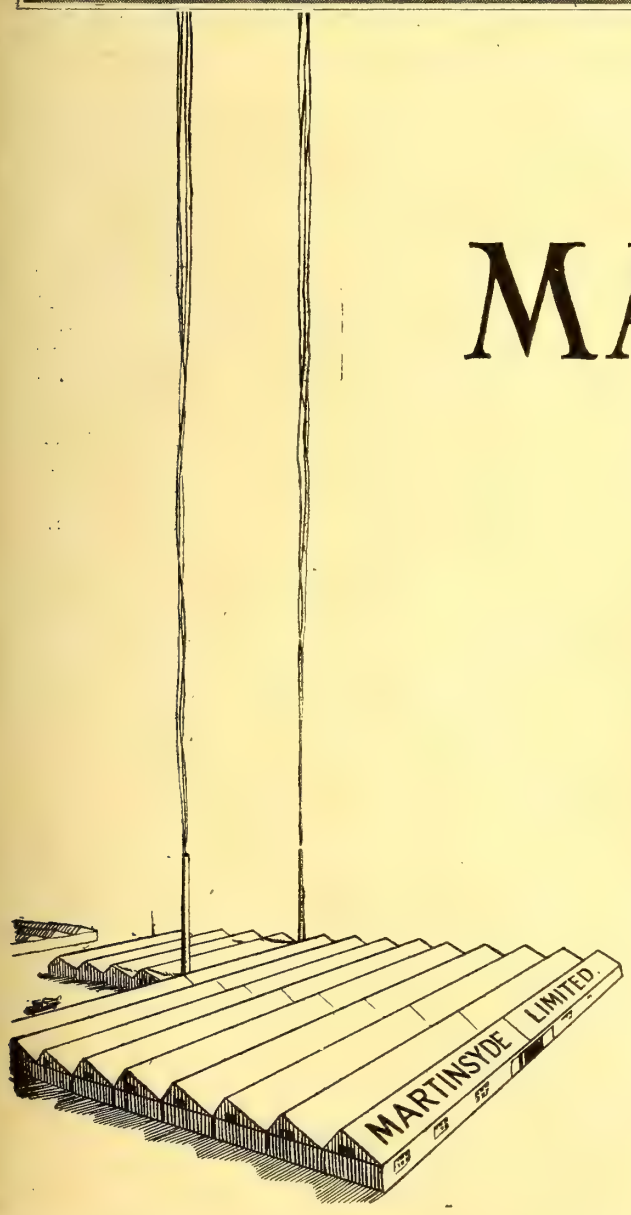
Capt. T. P. H. Beamish, C.B., R.N., Admiralty; H. B. Butler, Esq., Ministry of Labour; W. R. Davies, Esq., C.B., Board of Education; W. J. Glenny, Esq., O.B.E., Department of Overseas Trade; Col. A. P. D. Harris, India Office; Brig.-Gen. B. F. Burnett Hitchcock, C.B., D.S.O., War Office; Col. Sir Arthur Leetham, C.M.G., War Office; T. C. Macnaghten, Esq., O.B.E., Colonial Office; C. Home McCall, Esq., O.B.E., Appointments Department Ministry of Labour; Col. R. H. More, C.M.G., Air Ministry; Frederick Watson, Esq., Ministry of Pensions; C. M. Wynne, Esq., Ministry of Pensions; Sir Charles Bathurst, M.P., Central Chamber of Agriculture; Frank W. Garnett, Esq., C.B.E., R.C.V.S., Royal College of Veterinary Surgeons; Sir Alfred Goodson, Inns of Court Regimental Association; Henry T. Hare, Esq., Royal Institute of British Architects; Sir Charles Elton Longmore, K.C.B., Law Society; V. A. Malcolmson, Esq., British Empire Producers' Organisation; P. H. Mills, Esq., National Employers' Federation; Capt. C. E. Newton, Artists' Rifles Regimental Association; Edwin L. Orde, Esq., Federation of British Industries; Richard B. Pilcher, Esq., Institute of Chemistry of Great Britain and Ireland; H. A. Roberts, Esq., M.A., Advisory Committee of University Appointments Boards; A. M. Samuel, Esq., Association of Chambers of Commerce of the United Kingdom; Sir Wilfred Stokes, K.B.E., British Engineers' Association; Capt. Albert Smith, M.P.; Capt. P. F. Warner.

The Secretary of the Committee is Guy Ridley, Esq., C.B.E., of the Ministry of Labour, to whom any communications in regard to its work should be addressed.





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GOOD WORK BY THE I.A.F.

The frontier correspondent of the "Amsterdam Telegraaf" learns from travellers coming from Germany that no fewer than 40 persons were killed in the last air raid on Cologné.

The raid on Mannheim is said to have wrought tremendous damage, whole streets having been laid waste. The aniline factory at Bingen, near Coblenz, is reported practically destroyed.

The Frankfort authorities continue to issue additional instructions as to what people should do during air raids. The raid "alert" is practised every evening at 6 o'clock, and people are living in very considerable fear of aerial visitors.

An important meeting of representatives of eleven Rhine towns began on Aug. 29th at Saarbrücken, states the "Gazette de Lausanne," in order to discuss means of protection for the populations of the towns from Allied aerial bombing.

An appeal was made to German Grand Headquarters to come to an arrangement that both sides should not attack open towns; failing this, to increase the number of anti-aircraft guns, and to obtain rapid reparation for the damage and an immediate indemnity for the families of the injured and killed.

Meanwhile the assurance companies have raised their rates by 38 per cent. for lives and property in the Rhine towns.

THE WEEKLY RESUME.

The Royal Air Force, with the B.E.F (late R.F.C.), has, during the past week, dropped upwards of 200 tons of bombs, both by day and night, upon the German centres of communications, including the railway junctions at Douai, Valenciennes, Marcoing, Cambrai and Somain. Considerable damage was caused, as shown by photographs taken by British aviators.

The usual co-operation with the infantry and tank units has been carried out, and the retreating enemy has been harassed.

In air fighting upon the Western front, 74 enemy machines were destroyed and 34 driven down out of control; 32 British machines were reported missing.

The German maritime base at Bruges has been raided nine times by the late R.N.A.S. units. Good bursts on the West Basin being observed. Also, many successful raids have been carried out against important German military works at Zeebrugge, St. Pierre Capelle, Zeebrugge-Bruges Canal, Oostaker, Ghistelle, etc.

During the last three months the following raids occurred:—Raids upon German works at Zeebrugge, 72; at Bruges, 63; at Ostend, 64. Total, 199.

The Independent Force, R.A.F., has carried out during the week over 17 separate raids into German territory, Mannheim, Trèves, Cologne and Frankfort being amongst the towns attacked.

EASTERN AREAS.—British aviators have been active during the week, dropping a considerable weight of bombs and firing several thousands of rounds of machine-gun ammunition at ground targets, with good effect. In air fighting nine enemy machines were destroyed and one driven down out of control. Two British machines have been reported missing.

ANOTHER TANK YARN.

In opening an exhibition of war pictures at Lincoln on Aug. 29th Maj.-Gen. Seely said that Lincoln, with its glorious history, had first conceived and created that great engine of war which had revolutionised the modern battlefield. The invention of the Tank had done more than any other single thing to bring the end of the war in sight, and, above all, to save the lives of our brave men.

[Gen. Seely's statements are just about as far from the truth as were his statements about aircraft when he was at the War Office. Tanks were first conceived by Mr. R. F. Macfie, and were first created under the auspices of Commodore Sueter, R.N. The invention of the tank might have brought the end of the war in sight by now, and might have saved hundreds of thousands of lives, if it had been left in the hands of a real engineer possessed of an intellect, instead of being appropriated from the original inventor by successive cliques of promotion hunters. So far as Gen. Seely is concerned, possibly he has in mind the idea that if a tank falls through a bridge and so prevents troops from crossing and engaging the enemy it therefore saves the lives of our brave men. He always suffered, while in Parliament, from a curiously distorted view of facts, and perhaps the war has not quite cured his mental outlook.—C. G. G.]

AMERICAN AIRCRAFT CHANGES.

The "Times" correspondent writes from New York, Aug. 28th:

American aeroplane production has been reorganised with the appointment of Mr. John D. Ryan as Director of the Air Service, with the additional title of Second Assistant Secretary of War. Mr. Ryan was formerly head of the Production Department of the Aeroplane Bureau. His new position will give him exclusive control of the air service, and, though his section will be part of the War Department, for all practical purposes he will be independent.

The reason for this change is to secure more active construction of aeroplanes and more rapid shipment to the Expeditionary Force in France. Brig.-Gen. Kenly remains as Chief of the Operations of Aircraft Construction, but a new official will be appointed as head of the Production Bureau. There will simultaneously be reorganisation to speed up aeronautics.

The War Department announces the creation of a new Bureau of Munitions, with the First Assistant Secretary of War, Maj. Crowell, as Director.

The appointment of Mr. Ryan to be Assistant Secretary of War, with the title and functions of Director of the Air Service, is an important measure of consolidation. Mr. Ryan is given "the control and direction over the Bureau of Aircraft Production and the Bureau of Military Aeronautics, with full power completely to co-ordinate their activities and to develop and carry out the air programme."

The Naval Air Service is not apparently affected, and will continue as a subdivision of the Navy Department responsible solely to the Secretary of War.

The new arrangement should, under the able leadership of Mr. Ryan, eventually give to the American Air Force in France an administrative background.

The appointment of Major Crowell, First Assistant Secretary of War, as Director of Munitions means a tightening up of the machinery for the production of munitions. His office, together with the War Industries Board, will, in fact, combine something tantamount to the powers of a Ministry of Munitions—a concentration of authority, which is a great advance upon the work of overlapping committees, the existence of which caused a year ago a widespread demand for a Ministry of Munitions.

Mr. Stettinius, who vacates the Second Assistant Secretaryship of War in favour of Mr. Ryan, whose functions in Washington will now largely fall to Major Crowell, remains in Europe in charge of vital work regarding America's share in the inter-Allied programme of munitions and raw materials.

JULES VEDRINES' JOB.

Mr. H. J. Greenwall writes in the "Express," of Aug. 30th:—

Many people both in France and England have repeatedly asked what has become of Jules Védrines, France's most famous aviator before the war, of whom nothing whatever has been heard since the early days of the war when he bombarded Metz.

The "Petit Journal" raises the veil this morning, and shows that Védrines is a great hero, who has undertaken many perilous aerial journeys into Germany.

He has piloted many men into enemy territory and spent various periods in gaining invaluable information and in destroying important places by means of bombs. The enemy has imitated the French, and now does the same. Hence the recent warning published in Germany instructing civilians to give instant information of the landing of suspected aviators.

In less than four months Vedrines made seven journeys, on two occasions going to fetch his passengers at an agreed place. Védrines knew perfectly well that if he was caught he would be shot, but he always volunteered for these dangerous missions. He has been rewarded with the Legion of Honour, the Military Medal, and several brilliant citations in army orders.

Reuter's correspondent adds that Guynemer and Ballard were also concerned in this work from time to time.

A LOSS TO THE NATION.

Professor Robert Saundby, M.D., F.R.C.P., LL.D., Emeritus Professor of Medicine in the University of Birmingham, died at his residence, 68, Hagley Road, Edgbaston, on Aug. 28th. He was born in London in 1849, and as a young man was a tea-planter in the East. Owing to ill-health he came home, and began his medical education in Edinburgh, at what he regarded as the too mature age of 21.

After a distinguished career as a student he graduated in 1874 as Bachelor of Medicine, and was appointed a House Physician in the Edinburgh Royal Infirmary. In 1876 he went to Birmingham as Pathologist to the General Hospital, and next year became Assistant Physician. In 1885 he was appointed Physician, a post which he held for 27 years, until 1912. In 1887 he was made F.R.C.P., London; in 1897 LL.D., McGill University; in 1901 Master of Science, Birmingham; and in 1911 LL.D., St. Andrews.

He was President of the British Medical Association, 1911-12, and of its Council from 1896-99; and he held the Professorship of Medicine in Birmingham University for many years. He found time for much important research regarding the digestive system, and was the author of several publications on his own subjects, writing also on medical ethics and old age in relation to health and disease. He was a founder and editor of the Birmingham "Medical Review."

Professor Saundby married in 1880 Miss Spencer, of Wolverhampton, and had three sons and a daughter. Two of his sons are on service, one a captain in the Royal Air Force (late R.F.C.), and the third, an officer in the R.F.C., was killed about a year ago.

THE EXHIBITION OF GERMAN AIRCRAFT.

Several interesting additions have recently been made to the Technical Museum at the Agricultural Hall, Islington, which now includes the Hannoveraner fighter. Officers and men of the Royal Air Force and employees of firms engaged in the Aircraft Industry can obtain passes to view this exhibition from the Controller, the Technical Department, Aircraft Production Department, Ministry of Munitions, Kingsway, W.C.2.



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GEOFFREY WATSON

FROM THE "LONDON GAZETTE."

WAR OFFICE, Aug. 27th.

The King was pleased, on the occasion of the recent visit to his Army in the field, to make the following appointment to the Royal Victorian Order :—

Commander.—Maj.-Gen. J. M. Salmond, C.M.G., D.S.O., R.A.F.

AIR MINISTRY, Aug. 27th.

R.A.F.—The following temp. appt. is made :—Staff Officer, 3rd Cl.—Lt. (temp. Capt.) H. M. Ferreira, and to retain his temp. rank whilst so empld., June 10th.

The name of Capt. T. C. Macaulay, M.C., is as now described, and not as stated in "Gazette," May 10th.

FLYING BRANCH.—Capt. M. Le Blanc-Smith, D.F.C., to be temp. Maj. whilst empld. as Maj. (A.), Aug. 9th.

Lts. (temp. Capts.) to be temp. Majs. whilst empld. as Majs. (A.) :—F. P. Scott, June 19th; J. S. Williams, M.C., Aug. 2nd.

Lt. (temp. Capt.) J. P. Coleman to be temp. Maj. whilst empld. as Maj. (A. and S.), Aug. 8th.

Lt. (temp. Capt.) T. W. Elmhurst to be temp. Maj. whilst empld. as Maj. (Dir.), April 6th.

Lt. (temp Capt.) B. D. Hobbs, D.S.O., D.S.C., to be temp. Maj. whilst empld. as Maj. (S.), May 31st.

Lts. to be temp. Capts. whilst empld. as Capts. (A.) :—R. W. Rose, April 22nd; A. B. Dees, July 6th; G. N. Anderson, July 27th; J. R. Bell, July 29th; F. B. Barager, G. Bremridge, J. Bussey, F. F. Babbage, M. B. Burrell, L. F. Collins, I. M. Davies, A. H. G. Dunkerley, D. Dalgleish, F. M. Green, H. R. Griffin, (Fou. Capt.) F. M. Hicks, J. L. S. Hanman, W. Jones, J. G. Kidd, W. F. Mayoss, E. H. Marsden, C. E. Maslin, P. Moveney, H. F. Nicholls, W. E. Nicholson, J. J. Paine, J. W. Rayner, E. H. Stocken, W. D. B. Taylor, (Hon. Capt.) W. R. Winterbottom, C. A. B. B. Wilcock, H. W. Wheatley, Aug. 1st; C. Thomas, Aug. 3rd; E. J. Addis, Aug. 8th; S. Carlin, M.C., D.C.M., E. J. Salter, F. Smethurst, Aug. 9th; C. V. Gardner, Aug. 12th; H. Ford, Aug. 13th; A. R. McAfee, Aug. 14th; F. W. Clark, G. Gillanders, Aug. 15th; (Hon. Capt.) H. E. Winter, Aug. 16th; G. W. F. Darvill, H. W. Hewson, E. L. Zink, Aug. 18th; C. E. Abell, J. D. Breakey, J. D. McCall, A. D. K. Perkins, J. B. White, Aug. 19th.

Lt. (Hon. Capt.) C. M. Briscoe-Owen to be temp. Capt. whilst empld. as Capt. (O.), May 31st.

Lt. (Hon. Capt.) N. H. Woodhead to be temp. Capt. whilst empld. as Capt. (S.), June 15th.

Lt. (temp. Capt.) L. R. Charron relinquishes his temp. rank on reversion to Lt. (A.), Aug. 14th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A. and S.) :—A. J. Hamilton, May 14th; R. C. Tice, May 15th; J. B. Elton, June 8th; E. McEvoy, June 9th; C. A. Harrison, June 12th; K. R. March, June 20th.

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (A. and S.) :—S. Castle-Smith, April 17th; D. B. Foss, R. H. Foss, April 25th; S. J. Bolitho, J. R. Taylor, May 15th; P. B. Calder May 22nd; A. W. Beaven, May 24th; R. E. Thompson, June 9th, R. K. Stinson, June 11th; D. F. Tysoe, June 16th; P. R. J. Roberts, June 20th; H. L. Pitt, P. H. Goodhugh, June 21st; A. H. Partridge, P. E. Clarke, June 22nd; J. R. Robertson, June 24th; G. Kidd, G. W. Cooper, June 26th.

The following are granted temp. commns. as Sec. Lts. (A. and S.) :—A. M. Campbell (Lt., R.F.A., Spec. Res.), and to be Hon. Lt., April 20th; S. H. Richardson, June 18th.

The following Cadets are granted temp. commns. as Sec. Lts. (A. and S.) :—A. D. Butler, G. C. Blythe, T. Gray, B. J. Hendry, E. Hughes, I. G. Morrison, C. G. Henderson, B. C. Gibaud, July 30th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A. and S.) :—F. R. Brown, July 20th; G. C. Robbins, C. L. Hurst, July 22nd; R. D. Gilpin-Brown, G. A. Millbank, F. J. Keble, J. S. King, A. R. Robb, G. W. Jones, July 29th; A. Barnes, H. W. Gill, July 30th, C. M. Allan, P. W. Scott, W. F. Smith, G. J. Dickins, C. Turner, N. Smith, R. S. Kenyon, July 31st; F. W. Moulson, Aug. 1st; B. F. J. Johnson, B. T. Humphreys, A. E. Cuthbert, Aug. 2nd; D. D. Ashley, Aug. 5th; E. C. Brown, Aug. 8th; G. L. Reid, C. M. Galletly, F. C. Andrews, M. C. Kerr, W. L. Widgery, Aug. 9th; A. R. Deans, L. C. Welch, E. H. Bird, Aug. 10th; H. D. Thornton, Aug. 11th; J. M. Kelly, Aug. 12th; T. Burton, J. E. Whitehead, Aug. 13th; A. H. Griffiths, S. E. Storey, J. Browning, N. V. Moreton, E. H. Harrison, Aug. 14th; E. F. Wilkinson, Aug. 16th.

H. B. K. Trollope (late Lt., S.A. Forces) is granted a temp. commn. as Sec. Lt. (Dir.), and to be Hon. Lt., Aug. 1st.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (K.B.) :—A. C. Whittle, J. S. Wilson, E. G. Walker, W. F. Conway, J. H. Ashton, G. C. R. List, S. K. Barnes, A. B. G. Gunn, E. Dear, T. Hall, J. A. Hinchliffe, W. Barrett, May 16th; H. Shoosmith, July 16th.

The following are granted temp. commns. as Sec. Lts. (K.B.) :—W. C. Harvey (Sec. Lt., Arg. and Suthd. Highrs., T.F.), July 1st; W. Barlow (Sec. Lt., Lpool. R., T.F.), July 10th, J. L. Booth (Maj., R.E., T.F.), and to be Hon. Maj., July 30th, C. R. Smallwood (Sec. Lt., Lpool R., T.F.), Aug. 4th; H. Hough (Sec. Lt., N. Staff. R., T.F.), Aug. 7th.

Sec. Lt. A. Barnes to be Sec. Lt. (K.B.) from (T.), July 23rd.

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (K.B.) :—H. M. Whittle, H. J. Graves, May 11th; W. R. Atkinson, H. D. Johnson, A. H. Walton, W. J. Guppy, E. C. Parkinson, H. W. Symes, J. E. Wilkinson, May 16th; A. H. Wooster, May 17th; T. C. Lennox, H. P. Woodman, C. E. Jones, P. N. Kerney, E. H. H. Peel, A. Paveley, R. A. Mills, E. I. Davis, R. A. Talley, L. N. Mudditt, July 1st; W. J. Stratford, S. V. Annis, July 16th; A. E. Haylett, Aug. 7th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—H. Buckner, P. A. Clayson, May 18th; J. C. Baxter, A. A. Tutte, J. Wood, July 26th; I. S. Woodhouse, Aug. 10th; B. E. J. D. Tuke, J. Leftwich, W. T. S. Lewis, H. G. Lewis, A. McL. Miller, S. M. Myles, L. P. Perry, C. R. Pickering, S. C. Read, J. Ritchie, C. H. Senegal, E. T. Shone, W. M. Thompson, Aug. 16th; E. G. R. V. Bramble, Aug. 22nd; R. H. Armstrong, S. A. Barnett, W. Bailey, L. C. Belcher, W. V. Philpott, H. J. Pretty, C. E. Robinson, H. H. Senior, H. W. Williams, H. P. Hobbs, J. Davison, H. S. Chapman, A. G. Squire, A. E. Stock, C. O. Thompson, W. L. Walker, A. I. Watts, C. Wilkinson, H. C. Allen, G. S. Barber, R. Dunn, F. N. Coxhill, W. C. Brudenell, S. Burbidge, H. R. Burnett, R. F. Crossling, J. D. Evans, E. D. Barnes, C. E. Bellord, T. Calvert, J. C. Castle, R. Davison, G. A. Large, F. W. Ford, Aug. 23rd; D. E. Coe, S. F. Bett, S. F. Blackwell, F. Baylis, A. P. Booth, O. Berridge, P. F. Bruce, F. A. Bradley, J. B. Ballantyne, R. B. Gordon, R. C. Holdom, A. Johnson, A. S. H. Mills, A. Mulholland, P. V. Dobby, R. C. Cornell, H. N. Callaway, H. C. Norman, F. Nottingham, F. J. Shrive, E. V. Smith, B. Shaw, L. F. R. Ollington, J. R. Wilkinson, W. F. Watson, A. H. Winham, G. D. Lane, D. Neale, A. Taylor, Aug. 24th; W. H. Greaves, W. C. Benton, Aug. 25th; W. B. Clarke, H. S. Cranfield, R. H. Dilloway, A. Gammon, G. W. Pearce, T. L. Rose, A. Tretheway, H. Wittup, J. H. Kennedy, Aug. 26th.

The following relinquish their commns. on ceasing to be empld. :—Sec. Lt. C. P. Todd, July 10th; Lt. C. P. Sheppard, Aug. 1st.

Lt. F. W. Chambers relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lt., Aug. 28th.

The following Sec. Lts. relinquish their commns., having been found permanently unfit for further instruction as Pilots or Observers :—W. E. Hunt, C. P. Rumball, J. D. Taylor, Aug. 28th.

The date of relinquishment of commn. by Sec. Lt. F. Steel is July 26th, and not as stated in "Gazette," July 12th.

The surname of Lt. J. F. Forster, Bord. R., T.F. (Sec. Lt., A. and S.), is as now described, and not as in 'Gazette," July 19th.

The surname of Charles Evans Thorp is as now described, and not Thorpe, as in "Gazette," Aug. 9th.

The initials of Sec. Lt. L. J. W. Murphy are as now described, and not as in "Gazette," July 12th.

The notification in "Gazette," Aug. 6th, concerning H. B. King, is cancelled.

ADMINISTRATIVE BRANCH.—Capts. to be temp. Majs. while empld. as Majs. :—S. H. Cleall, July 9th; A. M. Lester, July 23rd.

Lts. (temp. Capts.) to be temp. Majs. while empld. as Majs. :—R. A. Hassard, July 23rd; M. Skitt, Aug. 1st; J. C. Forsyth, Aug. 19th.

Lts. to be temp. Capts. whilst empld. as Capts. :—W. C. Hacon, C. W. Jamieson, W. G. Nutter, May 15th.

Lts. to be Lts., from (A.) :—(Temp. Capt.) J. S. Michie, M.C., and to be Hon. Capt., June 6th; E. R. Evans, July 23rd; (Hon. Capt.) A. B. Campbell, and to be Hon. Capt., Aug. 1st; B. H. Godfrey, Aug. 10th; J. W. Jackson, Aug. 16th.

Lt. C. Clarke to be Lt. from (K.B.), Aug. 20th.

Lts. to be Lts., from (O.) :—H. S. Cudlip, June 10th; V. J. Holland, June 30th.

Lt. (Hon. Capt.) J. C. Watson to be Lt., from (S.), and to be Hon. Capt., Aug. 6th.

W. H. D. Phillips (temp. Qrmr. and Hon. Lt., R. Mar.) is granted a temp. commn. as Lt., June 26th (substituted for notification in the "Gazette" of July 30th).

C. H. Markham (Capt., Northd. Fus.) is granted a temp. commn. as Lt., and to be Hon. Capt., Aug. 15th.

Sec. Lts. to be temp. Lts. whilst empld. as Lts.—W. A. Carroll, R. C. Clements, F. Freeman, A. E. Marriott, A. H. Read, G. F. Tidbury, G. Williams, May 15th; G. J. Mackie, D.C.M., July 26th; H. P. Souter, Aug. 18th.

The following are granted temp. commns. as Sec. Lts., and to be temp. Lts. whilst specially empld. :—C. A. Assiter, L. H. Bainton, Aug. 26th.

The following are granted temp. commns. as Sec. Lts. :—S. J. Croad, Aug. 13th; W. Chester, D. T. Davies, T. J. Harrington (Qrmr. and Hon. Lt., Lond. R.), and to be Hon. Lt., H. A. Pippett, F. W. Waller, Aug. 24th; R. H. Clarke, H. D. Diggle, C. Green, A. A. Loveridge, A. H. Searle (late Lt., S.A. Rif.), and to be Hon. Lt., K. M. Vaughan, Aug. 26th.

Sec. Lt. P. H. Hutchings resigns his commn., Aug. 26th.

The initials of Lt. L. A. Woodward are as now described, and not as in "Gazette," Aug. 16th.

TECHNICAL BRANCH.—Capts. to be temp. Majs. whilst empld. as Majs. :—T. Macleod, June 19th; S. A. Currin, July 23rd.

Lts. (temp. Capts.) to be temp. Majs. while empld. as Majs. :—J. H. B. Burgess, W. S. Hammond, July 9th; R. E. Cook, July 23rd.

Lts. to be temp. Capts. while empld. as Capts. :—A. W. Phillips, M.C., April 1st; F. G. Brockman, May 1st; H. G. Etheridge, F. B. Nichol, May 15th; W. J. R. Sheppard, May 31st; W. G. Barry, G. L. Chater, June 1st; H. J. Finer, from (A.), July 23rd; (Hon. Capt.) E. S. Cohen, July 24th; H. J. L. Cappel, from (O.), Aug. 5th; Lt. A. Firth to be Lt., from (A.), June 1st.

Lts. to be Lts., from (O.) :—W. Hinsley, June 28th; W. McC. Taylor, July 1st.

Sec. Lts. to be temp. Lts. while empld. as Lts. :—(Hon. Lt.) J. B. Roth, April 1st; (Hon. Capt.) T. R. Duff, and retains his hon. rank; P. Haselock, E. M. M. Tomlinson, May 1st; J. Booth, H. H.

(*Continued on page* 870.)

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THE 300 H.P. MAYBACH ENGINE.

The following Official Report on the 300 h.p. Maybach engine is published by the kind permission of the Technical Department at the Air Ministry, to whom the thanks of the Editor are due.

(Concluded.)

LUBRICATION.

Several details of the lubrication system have been completely redesigned in the new Maybach engines. The former single oil pump, which was of the plunger type, has now been replaced by three separate oil pumps of the gear type. These, as shown in Fig. 25, are fitted in the bottom of the base chamber. The main oil pressure pump is at the rear end, whilst the two scavenger pumps are situated one at each end of the base chamber.

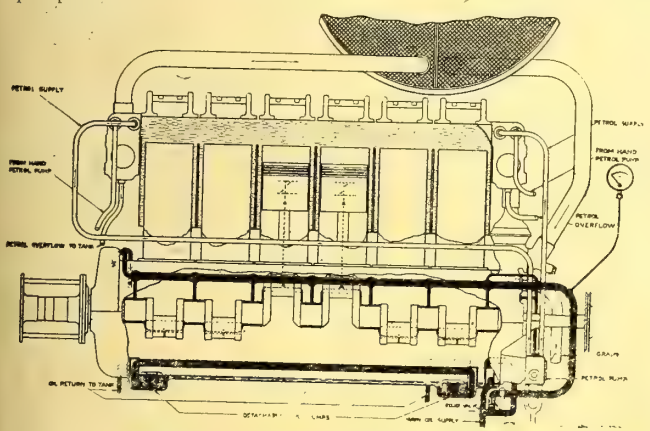


Fig. 27.—Lubrication Diagram, also showing petrol system and water circulation.

The general principle of the lubrication system is here clearly shown in the special diagrammatic drawing, Fig. 27, which is to a great extent self-explanatory.

In this diagram the lubrication system is shown with all the oil pipes and oil-ways marked in black. The system briefly described is as follows:—Oil is delivered from the separate oil tank by the pressure oil pump, which is the rearmost pump of the two at the rear of the sump, and forces oil under pressure to the crankshaft journal bearings through an external oil main, which runs the whole length of the crankcase on the induction side, as shown in Fig. 28.

From this main oil pipe oil is forced to the journal bearings through oil ways drilled diagonally in the crank chamber casting through the transverse webs which support the housings of the journal bearings; these are lubricated by a wide helical oil groove cut in the bearing white metal. For the lubrication of the crankpins and the connecting-rod small-end bearings, the well-known Maybach system of centrifugal pressure lubrication is adhered to. In this system the oil, which is forced out through the ends of the journal bearings, is collected by the oil scoops, which are bolted to the outer sides of each crank-webs, as shown in the view of the crankshaft Figs. 20 and 21.

By centrifugal action the oil is forced up the outer surface of each crank-web and led through a channel into the hollow crankpins, thence through a small hole bored radially in each crankpin to the connecting-rod big end bearings. From the big end bearings the oil is forced upwards to the small end bearings, with their floating gudgeon-pin bushes of cast-iron, through the steel pipe fixed in the centre of the connecting-rods. Details of this design have already been given. Fig. 31 is a detail sketch of one of the aluminium oil scoops, which are bolted in pairs to the crank-webs by a bolt which passes through the centre of the end crankpin.

From the front end of the main oil pipe a steel pipe is connected by a union, which leads to a hole drilled in the crankcase casting, and serves to lubricate the bearings of the camshaft intermediate gears. A restricting plug is fitted into the end of this oil lead, and a similar restriction is provided in the end of the main oil lead back into the crank chamber, as shown in the lubrication diagram.

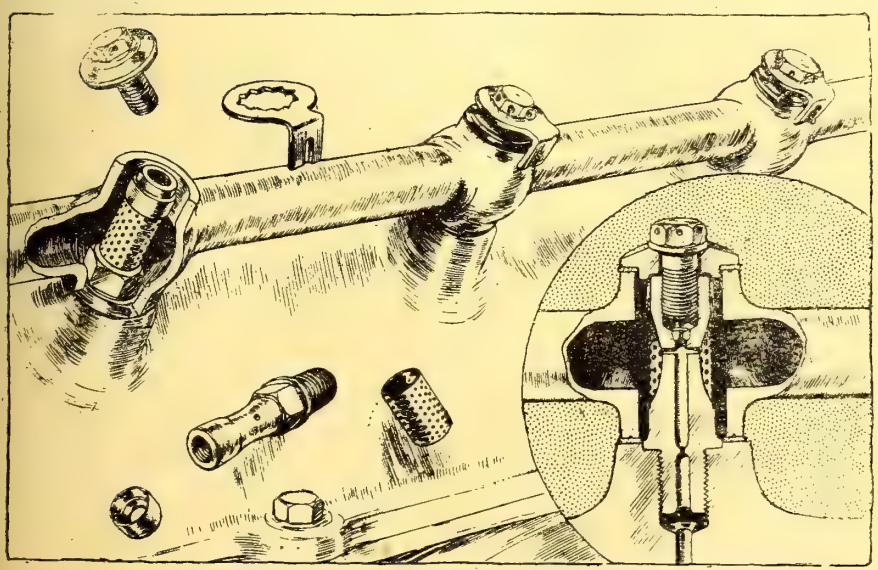


Fig. 28.—Sketch of oil main and oil filters.

A check valve, it will be noticed, is fitted in the main oil supply system. This check valve, together with a small spring-loaded pressure relief valve, is situated inside a small detachable valve chamber, which is attached to the bottom of the crank chamber just beneath the main oil pump. It will be noticed in the lubrication diagram that the excess oil pressure is delivered back into the oil pipe on the supply side of the pump. An oil pressure gauge is connected to the main oil lead as shown, and small oil pipes are also taken from the main pressure pipe to the small crank chamber of the petrol pump, and also to the water pump driving spindle.

The two scavenger oil pumps, situated one at either end of the base chamber, are designed so as to draw off the return oil which collects in the small detachable oil sumps in the bottom

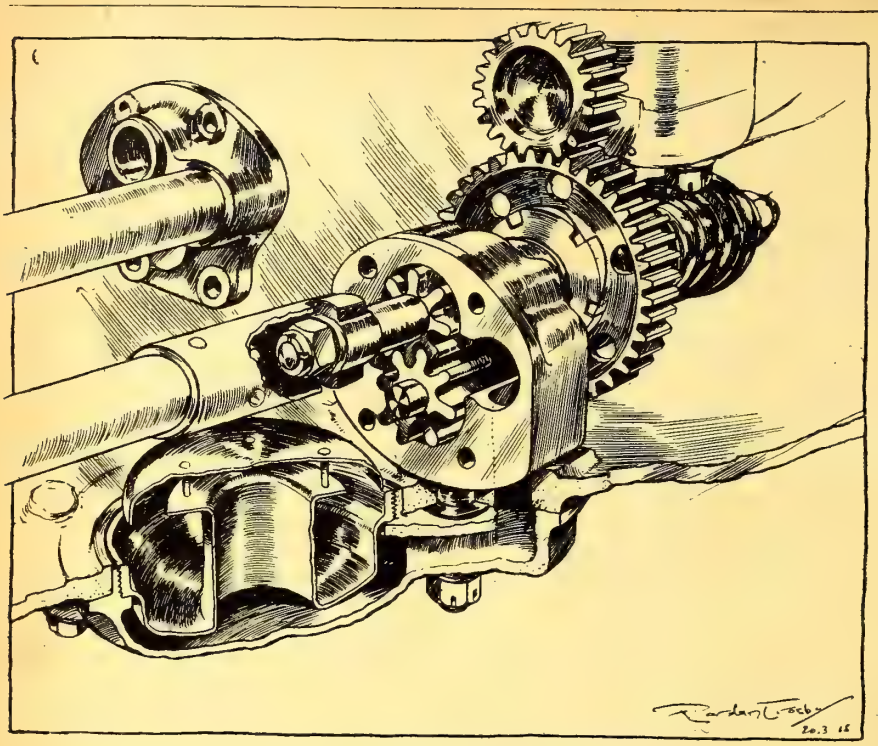


Fig. 29.—The front oil pump, showing ratchet drive and section of detachable oil sump in Chamber.

of the oil base, and to return it to the tank from either end.

These scavenger pumps are connected together by a steel pipe, 21 mm. diameter, the ends of which are coupled to the suction ports of the two gear oil pumps. This interconnection of the two pumps to a certain extent balances the oil return to the tank from the front and rear ends of the oil base, enabling both scavenger pumps to operate at any angle of the engine.

A small quantity of oil is always carried in the oil base, as shown in the lubrication diagram. The camshafts, tappets, and cylinder walls are splash lubricated by the surplus oil thrown off the crankshaft and oil scoops; and the camshaft and magneto gears are lubricated through oil ways cut in the camshaft bearings at either end. Baffle plates are fitted below the cylinders in the recesses machined in the top face of the crank chamber, as shown in Fig. 30.

Constructional Details of Oil Pumps, Etc.

No provision is made for lubricating the roller bearings of the overhead valve rocker spindles, and no oil holes are made in their brackets for hand lubrication.

The general design of all three oil pumps and their delivery is the same. The general construction is clearly shown in the sketch of the front scavenger pump, Fig. 29. A pair of pump gears of the usual formation, 30 mm. diameter, work in a body casting of cast-iron. The top pump gear is of steel, and is machined integral with the driving spindle of the pump, whilst the lower pump gear is made of gun-metal. The oil pumps are secured to the machined seatings cast on the bottom of the oil base by a stud in each case, which also serves to hold the small detachable oil sumps in position. These oil sumps consist of aluminium castings, into the cupped centre of which is screwed a spun brass oil trap, formed as shown in the sectional perspective sketch. These oil sumps are connected to the suction ports of the oil pumps by a passage formed in the sump body castings.

All three oil pumps are driven at the same speed, the two scavenger pumps being connected together by a light tubular shaft, which engages with dog clutches at either end; the pressure oil pump is driven off the spindle of the rear scavenger pump through a dog clutch extension of the spindle.

The method of driving the oil pumps at the front end of the engine is of interesting and unusual design. As shown in the sketch, Fig. 29, the driving gear wheel, which is mounted on the front extension of the pump spindle, is provided with a spring-loaded face ratchet, the teeth of which are cut inside the gear as shown, and engage with similar teeth cut on a flange on the front of the pump driving spindle. The strength of the spring is such as to allow the driving gear to overrun the driving spindle, and apparently in the event of backfiring, all the oil pumps become inoperative, and would thus be prevented from being sucked back into the oil base by the two scavenger pumps.

An interesting feature in the lubrication system of these engines is found in the small separate oil filters, which are provided at the top of each of the diagonal oil ways drilled through the webs of the main journal bearing housings. The small filters are screwed

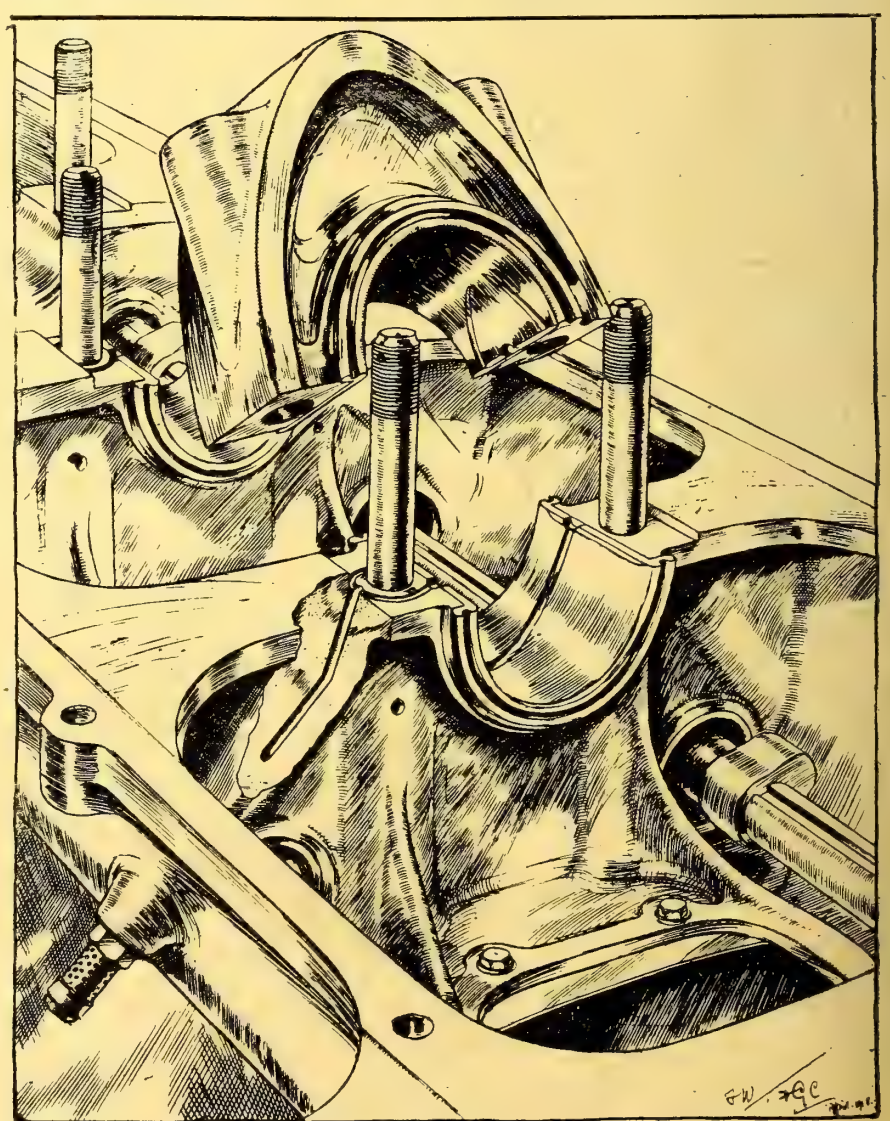


Fig. 30.—Sketch of top half of Crankcase, showing journal bearings and oil passages.

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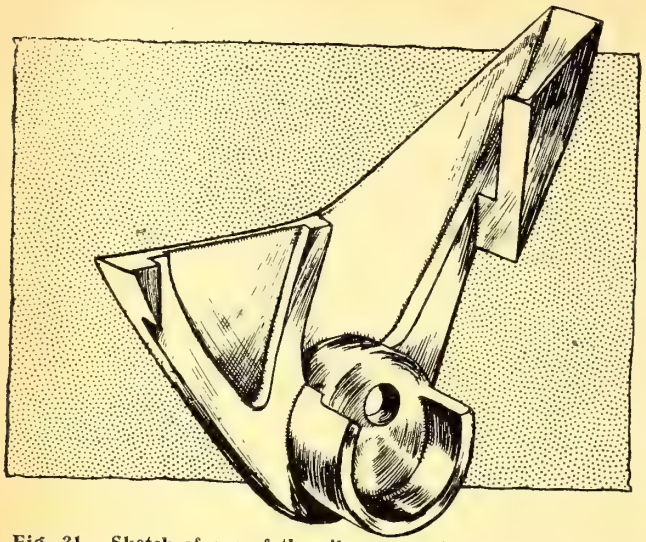


Fig. 31.—Sketch of one of the oil scoops attached to the sides of the crank-webs for conveying oil to the crank-pins.

into the bosses, which are cast on the outside of the crank chamber, and to which the detachable main oil pressure pipe is attached.

In Fig. 28 the method of attaching the main oil pipe by a set screw and a cap fitted with a leather washer is shown. The set screw is screwed into the top of the filter plug at the top of the drilled oil lead, and a small jet or drilled plug is fitted below the set screw, the plug being let into a small recess cut in the top of the oil lead. The bore of this plug corresponds to the bore of the restriction formed in the oil lead drilled in the filter plug just below as shown. This device is apparently provided to allow for a special plug to be attached in place of any of the six set screws, which can then be coupled to a pressure gauge, thus giving the oil pressure at any of the main bearings.

Further details of the formation of the oil passages drilled through the crankcase to the journal bearings, and also of the construction of the main bearing caps are given in the sketch Fig. 30, which shows the underneath view of the top half of the crank chamber. The oil is led round the bearing bolts through circular oil grooves cut in the face of the bearing housings. The small holes, drilled in the crankcase above the joints, as shown, communicate with recesses machined around the bolts. These holes are made to prevent the oil from being forced upwards out of the engine through the bolt holes in the crank chamber.

Water Pump and Water Cooling System.

Details of the construction of the water pump are shown in the sectional drawing, Fig. 32. The body of the water pump is attached to the top face of the separate aluminium casting which forms the cover of the magneto driving gears. This gear cover is attached by bolts and studs to the rear end of both the top and bottom halves of the crank chamber. As may be seen in the general arrangement drawing of the engine, the water pump spindle is driven through a dog clutch at its lower end by a short vertical spindle running in a bronze bush bearing; this spindle is driven by a bevel gear meshing with the main bevel fixed on the rear end of the crankshaft

The water pump vertical spindle, which is 20 mm. in diameter, runs in a bronze bearing, which is lubricated by a screw grease-lubricator. The top portion of the pump spindle bearing is cupped to form the housing for a thrust ball race, above which is fixed the pump rotor.

The pump rotor is a gun-metal casting, having six helical vanes 110 mm. in diameter. The rotor is fixed to the pump spindle on a taper and key, and is locked by a domed nut and locking washer.

The lower half of the pump body is an aluminium casting with an inlet passage 54 mm. in diameter, to which the diagonal water pipe from the radiator is coupled by a rubber connection. The top half of the water pump body, which is a gun-metal casting, is formed with six helical passages leading in a reverse helical direction to the water pump rotor. These passages connect with the common vertical outlet passage in the top of the body

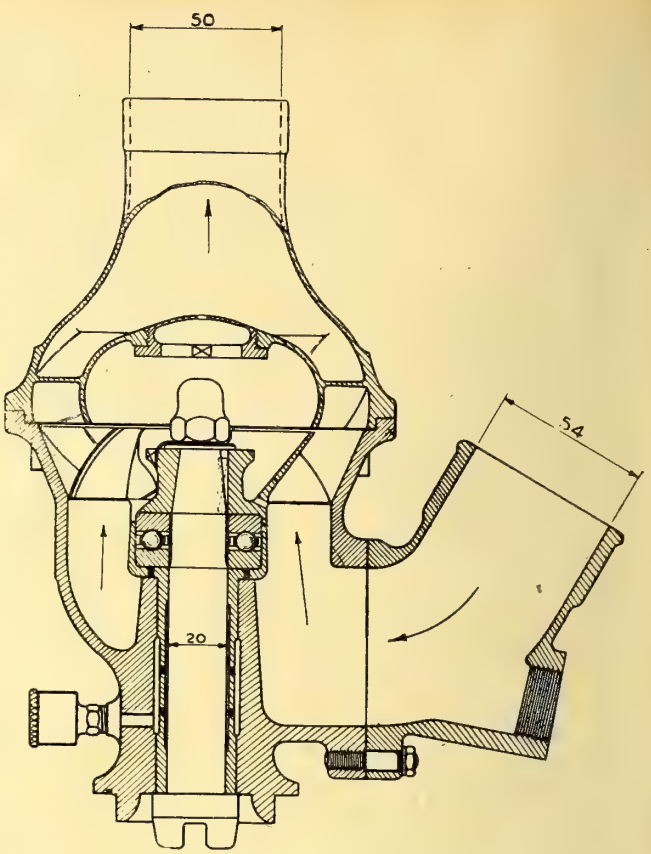


Fig. 32.—Section of Water Pump.

casting as shown in Fig. 32. The outlet diameter is 50 mm. The centre portion of the top body casting inside the helical passages above the pump rotor is domed and fitted with a screwed plug 38 mm. in diameter. This plug is drilled with a 3.5 mm. hole, evidently to prevent an air lock. Two 3 mm. holes are also drilled in the bottom of the rotor between the vanes for the same purpose. It is noticeable that the steel ball thrust race is working to all intents in the water flow, and must, therefore, suffer by corrosion.

Water Circulation.

The circulation of the water cooling system is clearly set out in the diagrammatic drawing, Fig. 27, from which it will be seen that the water pump delivers directly into the bottom of the water jacket which surrounds the body of the rear carburettor. As already mentioned, the two carburettors are attached by long studs to the ends of the front and rear cylinders, and the water after passing through the rear carburettor water jacket in a special passage round the throttle valve, enters the rear cylinder through the two circular water joint flanges. The water passes through the passages cast in each of the six cylinder heads to

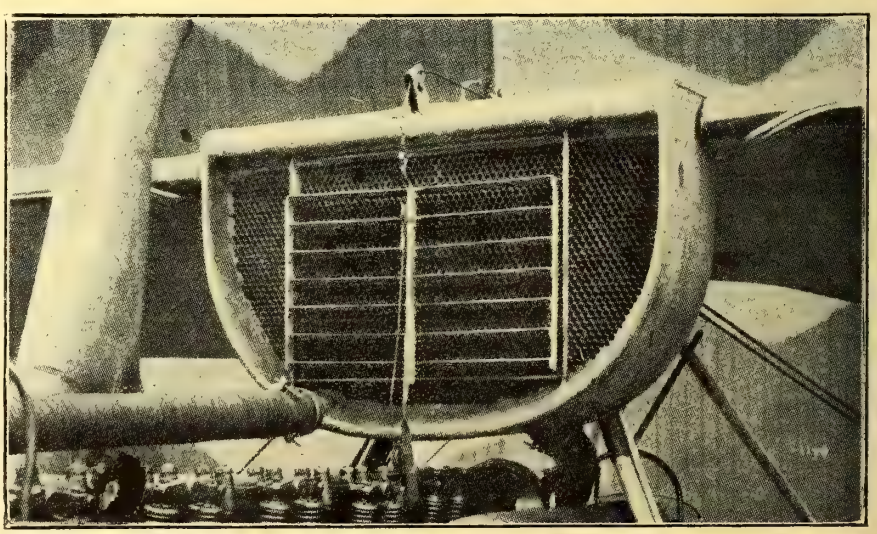


Fig. 33.—Radiator fitted to Centre Section of Rumpler Biplanes, as used with 300 h.p. Maybach and 260 h.p. Mercédès Engines.

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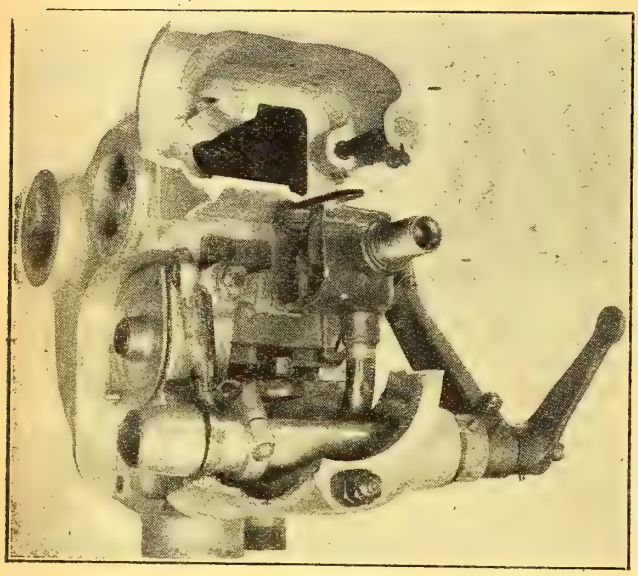


Fig. 34.—One of the carburettors broken to show gravity petrol reservoir and interconnected throttle, jet control and main air guillotine shutter, also induction and water passages to cylinders.

the front carburettor water jacket, whence the water is forced out through a vertical passage 50 mm. diameter through a diagonal pipe leading to the radiator, which is slung above the engine from the centre section of the top plane.

The radiator is of entirely new design, and is shown in the photograph (Fig. 33) fitted to a 260 h.p. Mercédès engine. Unfortunately, it has been impossible to carry out any tests on this interesting type of radiator, a separate report on which will be issued later.

According to a French report, this radiator is very efficient. It is of semi-circular shape in front elevation, and is formed of hexagonal honeycombed tubes, and exceptionally deep in cross section, measuring 22 cms. The radius of the semi-circle in elevation is approximately 32 cms.

The radiator is divided into two separate sections by a vertical baffle plate, as shown in the diagram Fig. 27. Water enters the bottom of the left-hand side of the radiator through the pipe leading from the front carburettor, and flows upwards through the tubes of the left-hand of the radiator to the top portion of the tank which completely surrounds the radiator. The water passes over the top of the dividing baffle plate, through the right-hand section to the bottom of the radiator, and out at the rear side, which is connected with a 50 mm. pipe to the inlet passage of the water pump.

As will be noticed, the front of the radiator is fitted with a blind, which is operated by a cable from the pilot's seat.

Ignition.

The two Bosch Z.H.6 type magnetos are mounted on brackets cast on the rear end of the base chamber, and are driven at 1.5 : 1 engine speed directly off the rear end of the camshafts. The ignition point is set 38 deg. early. Two Bosch 3-point plugs are somewhat inaccessibly fitted in the head of each cylinder between the twin water connections as previously described. The plug bosses are water-cooled. The high tension cables are carried in fibre tubes bolted to the cylinders, and the leads to the plugs are taken through fibre blocks mounted on the sheet-metal brackets on the cylinder heads.

Order of firing—1-5-3-6-2-4.

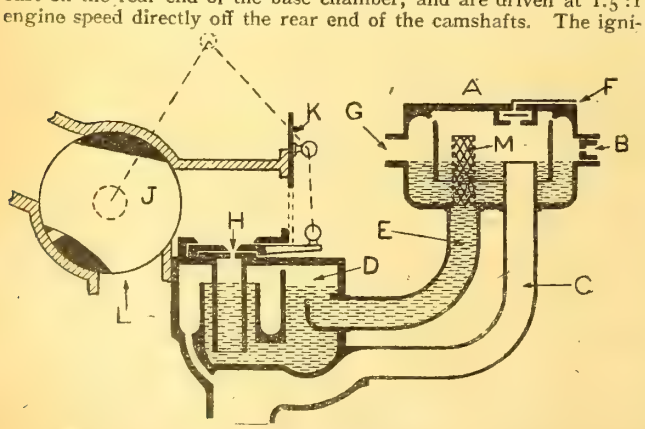


Fig. 35.—Diagrammatic Section of Carburettor.

Carburettors.

The two carburettors are attached to the heads of the front and rear cylinders, as already described, and their general construction is shown in the cross-sectional drawing Fig. 39. The carburettors follow the distinctive principles of the well-known Maybach design, but are slightly modified in many of their details as compared with the earlier engines.

These carburettors are designed to be used in conjunction with a petrol pump system, and in place of a float chamber employ two small constant-level overflow tanks inside each carburettor. This method obviates the necessity for using pressure release valves in the petrol system. Referring to the sectional drawing of the carburettor, Fig. 39, they are constructed of a cast aluminium water jacketed body, in the centre of which is mounted the rotary barrel-type throttle, open on one side to the curved passage to the induction pipe, and on the other to the mixing chamber above the jets. The main air supply is taken through a passage cast in the aluminium carburettor body directly below the throttle, and the extra air supply is automatically controlled by a guillotine type shutter, which works vertically just in front of the jet control lever. The throttles of both carburettors, together with the mechanically controlled jets and the extra air shutters, are all interconnected. The arrangement of these cranks and interconnecting levers is shown in the photograph of the specially sectioned carburettor (Fig. 34).

The working principle of the carburettors and the functions of the various parts is more clearly demonstrated in the purely diagrammatic sectional drawing, Fig. 35, which is, to a great extent, self-explanatory. Petrol is delivered by the petrol pump into the small tank A of each carburettor through a restricting jet B, shown in the diagram. The petrol in these small tanks or reservoirs is kept at a constant level by means of the overflow pipe C, which leads back to the main petrol tank, via the small lower tanks D below the jets which are supplied through the pipe E. An air vent F, fitted with a baffle plate, is provided in the top of the constant level tank A, which is also connected to the main petrol tank by a pipe G, leading to a hand petrol pump, or may be plugged and not used, as was the case in the Rumpler biplane. The main and pilot jets consist of two holes drilled in the top cover of the lower reservoir D, and are similar in principle to the White and Poppe jets. The area of the jet openings is mechanically controlled by means of a small hole drilled eccentrically in the jet cap H, which, as previously described, is connected by levers to the throttle and air control levers. The function of the top tank A is apparently to deal with the large excess of petrol delivered by the petrol pump at high speeds, whilst the lower tank, which is gravity fed, provides a constant petrol level for the jets.

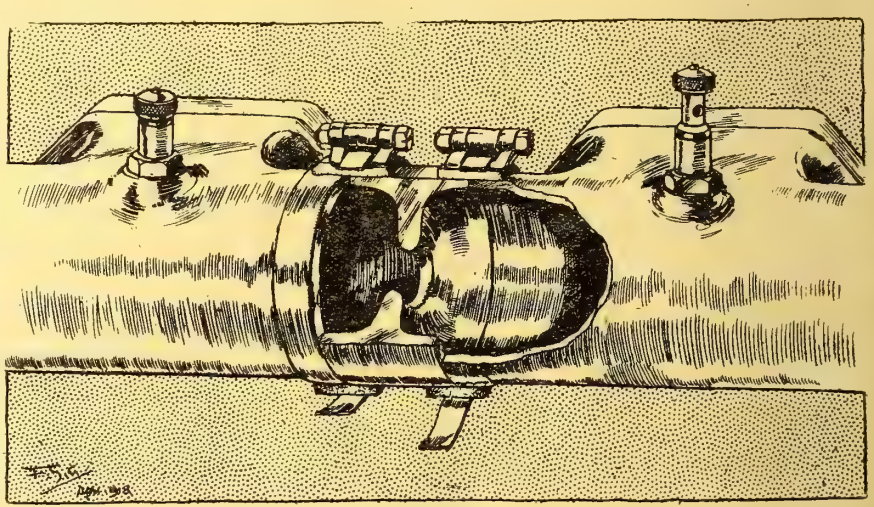


Fig. 36.—Induction pipe baffle and priming caps.

The mixture strength at any point on the throttle curve is governed by purely mechanical means, there being no venturi or special jet arrangement. The jet depression is obtained by restricting the air flow at what approximates to a sharp-edged orifice; consequently the loss through the carburettor is very high compared with a carburettor using a venturi tube to get the jet depression.

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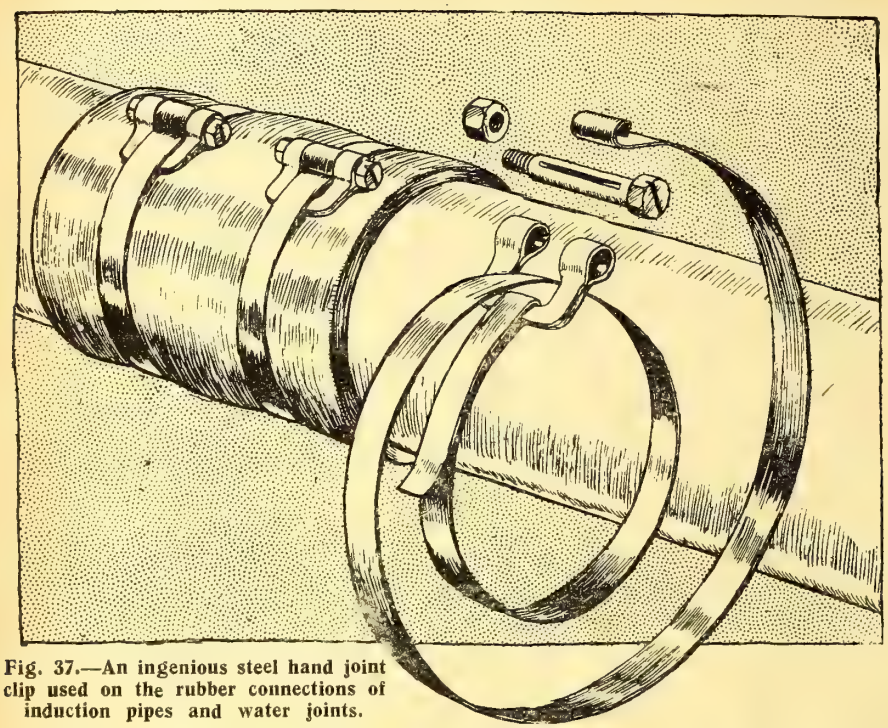


Fig. 37.—An ingenious steel hand joint clip used on the rubber connections of induction pipes and water joints.

Contrary to usual practice, the jet depression actually increases on throttling down, the depression being about four times as great at half throttle as at full throttle.

CONTROL ADJUSTMENT.

When running slowly, the throttle is slightly open, the supplementary air port closed, and the air shutter practically closed; in this position the small or pilot jet only is open. On opening the throttle, the supplementary air port commences to open in conjunction with the throttle opening. The main air shutter automatically opens in proportion, admitting more air, which passes directly across the top of the jets, and the jet area increases until the main jet orifice is fully open.

Owing to the interconnection of the control levers, there comes a point when the supplementary air port area increases out of all proportion to the increase in the jet area, the latter reaching a limit with no further increase by reason of the arrangement of the levers. This point represents the opening for maximum power at ground-level. If the throttle is opened beyond this point, the air supply rapidly becomes out of proportion to the jet opening and petrol supply. By this arrangement a simple form of altitude control is provided.

The various positions for "slow running," "slow speed," "full speed," and "altitude" are marked on the body of the carburettor, and are indicated by a pointer attached to the throttle lever of the rear end carburettor. By means of these markings on the carburettor the correct settings of the throttle lever can be checked when the engine is installed in the machine.

The translation of these markings on the carburettor is as follows:—

LE = Leer = Running Light.
LA = Langsam = Slow Speed.
V = Voll = Full Speed.
H = Hohe = Altitude.

The induction pipes are aluminium castings, and are of exceptionally neat design being, as shown in Fig. 36, joined together in one straight pipe. A cast aluminium baffle plate drilled in the centre with a 20 mm. hole is provided in the centre of the two induction pipes between the front and rear three cylinders. This baffle is evidently fitted to equalise the gas supply to all cylinders.

The design of this equalising baffle is shown in the perspective sketch, Fig. 36, which also shows the method of joining the ends of the induction pipes by rubber connections and band clips.

Details of the six small primer valves fitted into the top of the induction pipe are shown in the sketch. Fig. 37 clearly shows the construction of the interesting type of band clip which is used for making the connections in the induction pipes, and also for most of the water joints on these engines. These clips are now extensively used on all enemy engines. The method of using these clips is herewith reprinted from the previous report on the 230 h.p. Benz engine.

The clips are made of thin strips of annealed spring steel; these are wound twice round the rubber rings and fastened by small steel links and bolts. In starting to make this joint, the end of the steel band is first bent over the bottom bar of the connecting link, and then wound twice round the rubber ring, the free end of the steel band passing through the centre portion of the connecting link on the second winding. The end of the steel band is then fastened to the top end of the link by coiling the end several times round the small bolt in the head of the link, the end of the steel band being bent over for about 2 mm., and inserted into a slot cut in the bolt, so that by turning the bolt in the link the steel band is wound tightly round the ring joints, and, owing to the position and shape of the link, remains fixed.

CARBURETTOR TESTS.

The Maybach carburettor has been tested separately at R.A.E. The results of these tests are shown graphically in the power and throttle curves (Fig 41), together with a throttle curve diagram in comparison with the H.C.8 Claudel-Hobson carburettor (Fig. 40).

CHARACTERISTIC CURVES.

(a) Throttle Curve.—The throttle curve appears good. There is an excess of petrol at first which should give good acceleration, and there is a fair range, down from full throttle, of weak mixture suitable for cruising. Obviously, if it is considered desirable to have petrol and air control interconnected, any required throttle curve could be obtained, but it makes an unnecessarily complicated instrument. In this particular carburettor there are four ball universal joints and two sliding blocks.

(b) Power Curves.—The power curves are satisfactory, the mixture being practically constant over a large air speed range.

RESISTANCE TEST.

The resistance is very high compared with carburettors of ordinary design. For purposes of comparison, the resistance of the H.C.8 Claudel-Hobson carburettor is plotted on the same

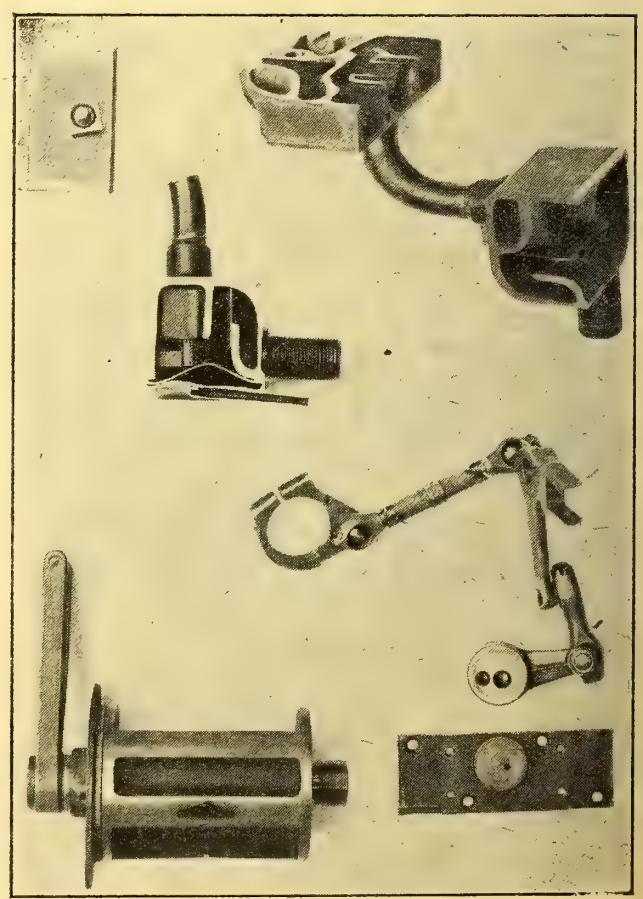
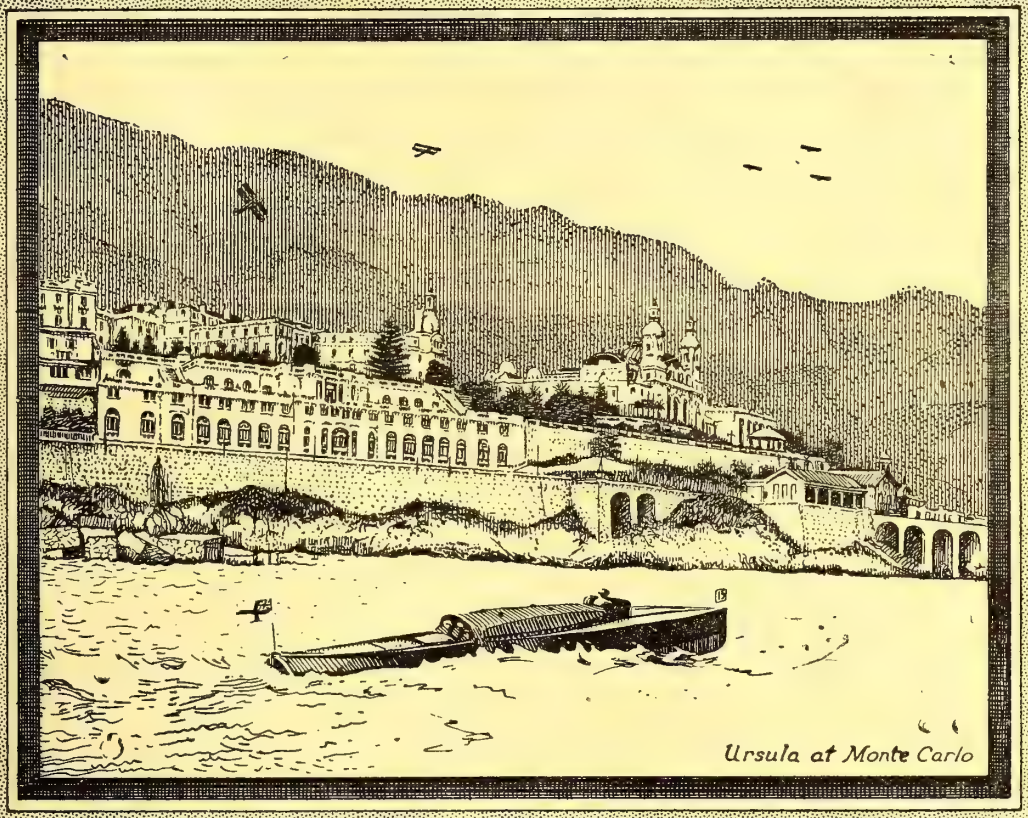


Fig. 38.—The throttle and jets dismantled; air-shutter; and sectional views of petrol reservoirs in carburettors.



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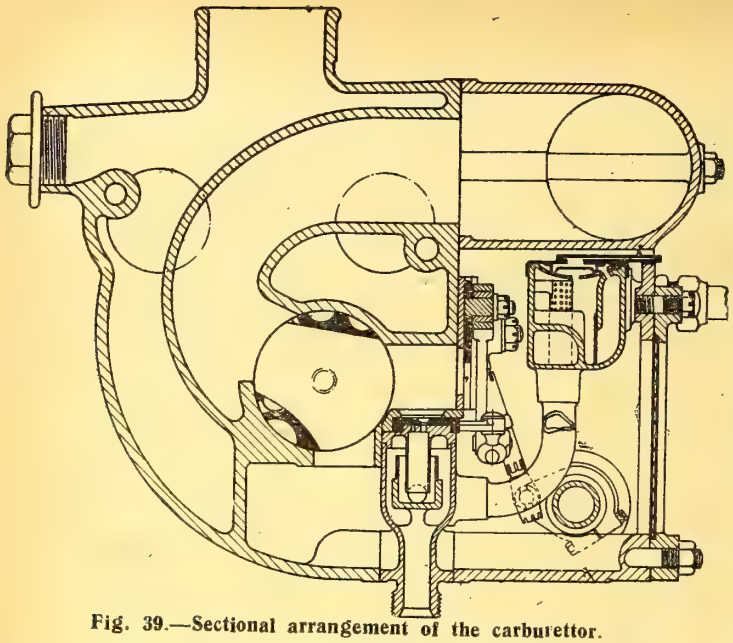


Fig. 39.—Sectional arrangement of the carburettor.

curve. The two carburettors are for engines of about the same horse-power, and it will be seen that the resistance of the Maybach is about nine times that of the Claudel-Hobson.

Atomisation Test.

	Air Temperature.	Air Cub. Ft. min.	Petrol pts./hr.	Deposit c.c./min.	Deposit % of petrol flow
Maybach	58°F.	192	50	23	4.85%
H.C.8 Claudel-Hobson	58°F.	195	51	32	6.62%

The atomisation of the Maybach is rather better than the Claudel-Hobson, but this is obtained by a high depression and high loss through the carburettor.

Conclusion.

The carburettor seems satisfactory on throttle and power curves and atomisation, but the resistance is very high and the weight excessive. The throttle curve is obtained by a complicated mechanical system which would need careful first adjustment and constant adjustment for wear. The air is taken in through the moving parts, and if any dust is present the mechanism is very liable to stick or to render the control very hard to operate.

Petrol Supply System.

Petrol is supplied to the two carburettors by a small double-acting duplex petrol pump, which is attached to the rear end of the bottom half of the oil base, and is driven at half engine speed directly off the rear end of the main oil pump spindle, the petrol pump driving shaft being coupled to the oil pump spindle by a dog clutch. The installation of the petrol pump is clearly shown in the general arrangement drawing of the engine, and the details of the petrol supply system are shown in the diagrammatic drawing (Fig. 27).

Regarding the installation of the petrol supply system to the petrol pump in the machine, it is assumed that the main petrol tank is provided with the ordinary float regulator, which has always been fitted inside the petrol tanks for regulating the supply through the petrol pumps; but owing to the fact that the machines from which these new Maybach engines were taken are completely destroyed no information regarding the construction and installation of the petrol tanks is available.

In the Rumpler machines fitted with the 260 h.p. Mercédès engines two petrol tanks are fitted. The main tank is in the centre of the fuselage behind the pilot's seat, and the auxiliary tank is situated under the pilot's seat.

Petrol Pump.

The design of the compound petrol pump is shown in the sectional drawing (Fig. 43) and also in the sectional perspective sketch (Fig. 42)

The petrol pump consists of two opposed cylinders, in which a reciprocating plunger works, the ends of which operate as single acting pumps. The pump plunger carries a yoke fitted with a sliding bush, which forms the crank-pin bearing of the small pump crankshaft, driven, as already described, off the rear end of the oil pump spindle at half engine speed. The bore of the petrol pump plunger is 15 mm. and the stroke is 17 mm. The outer ends of the pump barrels are as shown, and are fitted with screwed plugs, which form compression chambers.

The small non-return suction valves are situated directly above and below the two compression chambers, and the two petrol delivery valves are fitted above the compression chambers. The valves communicate with the compression chambers through small ports drilled in the pump barrel. Both the suction and delivery valves are of the poppet type, and each delivery valve is spring loaded by means of a small brass wire coil spring.

The valves are supported in guides drilled in the unions which form valve boxes, and to which the petrol delivery pipes from the petrol tanks and to the carburettors are connected. The internal diameter of both these pipes is 10 mm.

It will be noticed that both the suction valves are fed by the same petrol supply pipe as shown in the sketch.

The centre portion of the petrol pump body, which is a gun-metal casting, forms a small circular crank chamber for the pump plunger, and is fitted at the bottom with a detachable cover plate, which is secured by six set screws. The whole of the pump crank chamber is filled with oil under pressure from the main lubrication system, through an oil pipe connected to the centre of the pump body casting, and leading from the rear end of the detachable main oil lead pipe on the engine. By this means

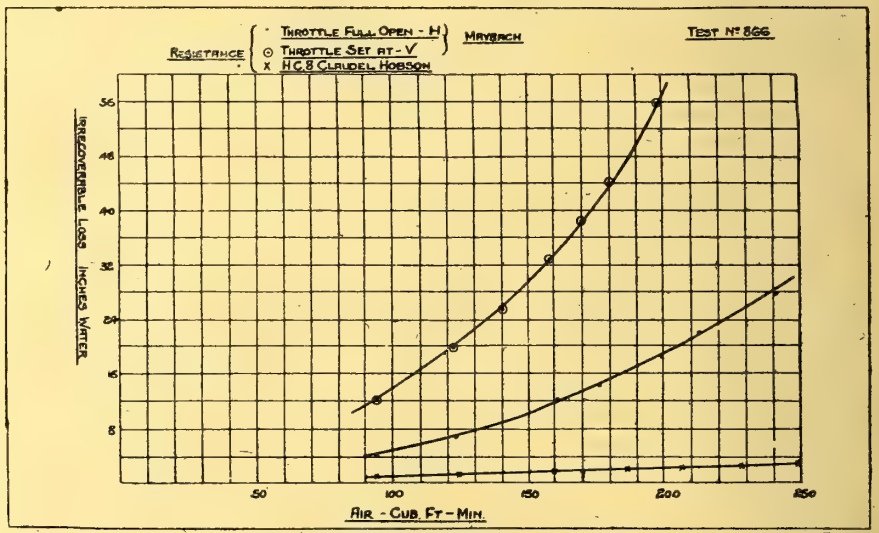


Fig. 40.—Diagram of Comparative tests of Carburettor.

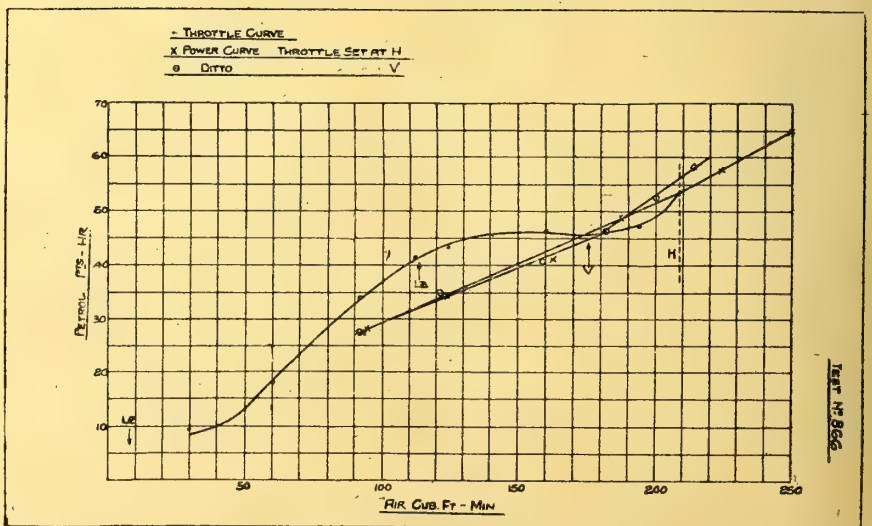


Fig. 41.—Carburettor Test—Throttle curve diagram.

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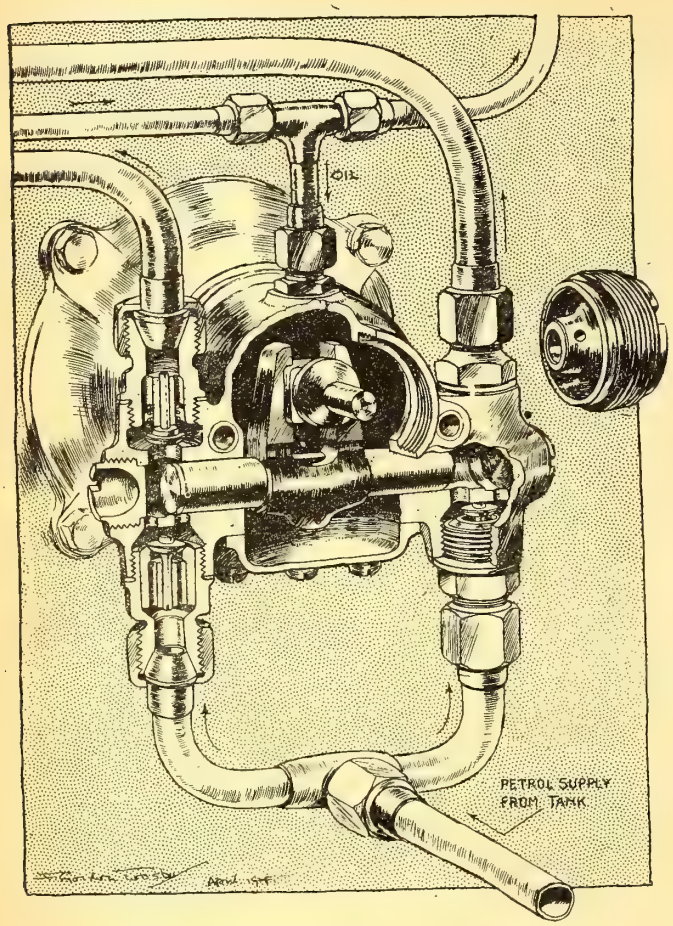


Fig. 42.—Sectional Sketch of Petrol Pump.

the efficient lubrication of the yoke and sliding bush and also of the seating of the pump plunger is assured.

R.A.E. Tests of Petrol Pump.

Flow tests at three speeds with varying heads were taken, in order to represent working conditions in the engine, flow tests were also taken through jets similar to those employed on the engine.

Delivery Tests.

The petrol pump was run at three speeds, viz.: 550, 800, and 1,275 r.p.m., and the outlet pipe was connected to the pump against a variable head from zero to 6 lbs. per square inch.

The maximum and minimum petrol delivery at these speeds are given in the following table:—

Revs. per min.	Maximum flow. Zero head.	Minimum flow. 6 lbs. head.
550	..... 300 pints per hour	..... 167 pints per hour.
800	..... 422 pints per hour	..... 264 pints per hour.
1275	..... 630 pints per hour	..... 498 pints per hour.

Fig. 44 shows the graphs of these tests with varying heads plotted against delivery at constant speeds. These curves are quite normal, and it is evident from them that the valves are acting well, and that the drop in delivery with increasing head resistance is due to cavitation. The pressure of the oil in the

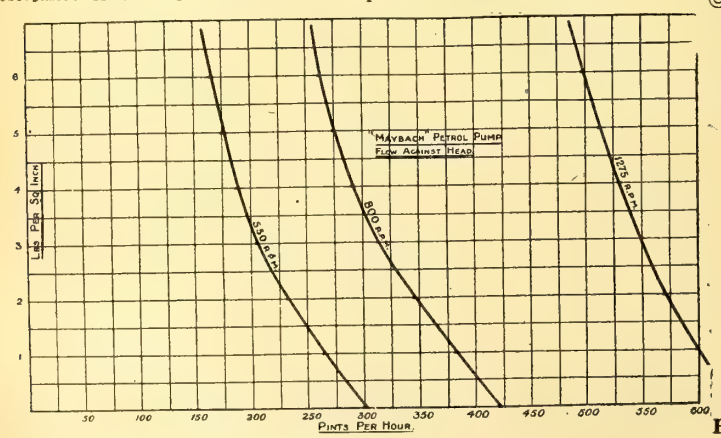


Fig. 44.—Diagram of petrol pump delivery flow against varying heads.

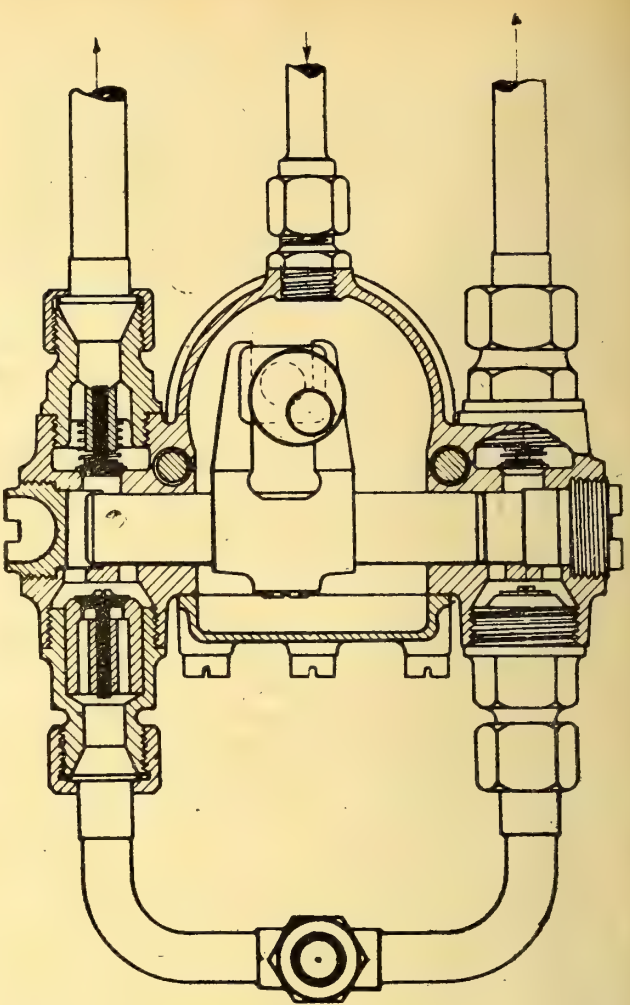


Fig. 43.—Sectional arrangement of Petrol Pump.

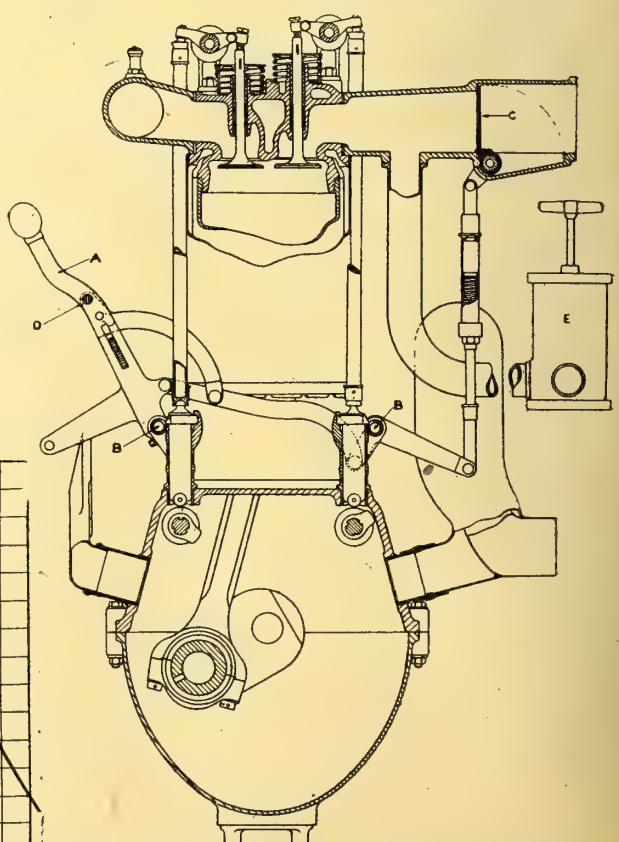


Fig. 45.—Diagrammatic Section of Engine, showing functions of Starting Mechanism.

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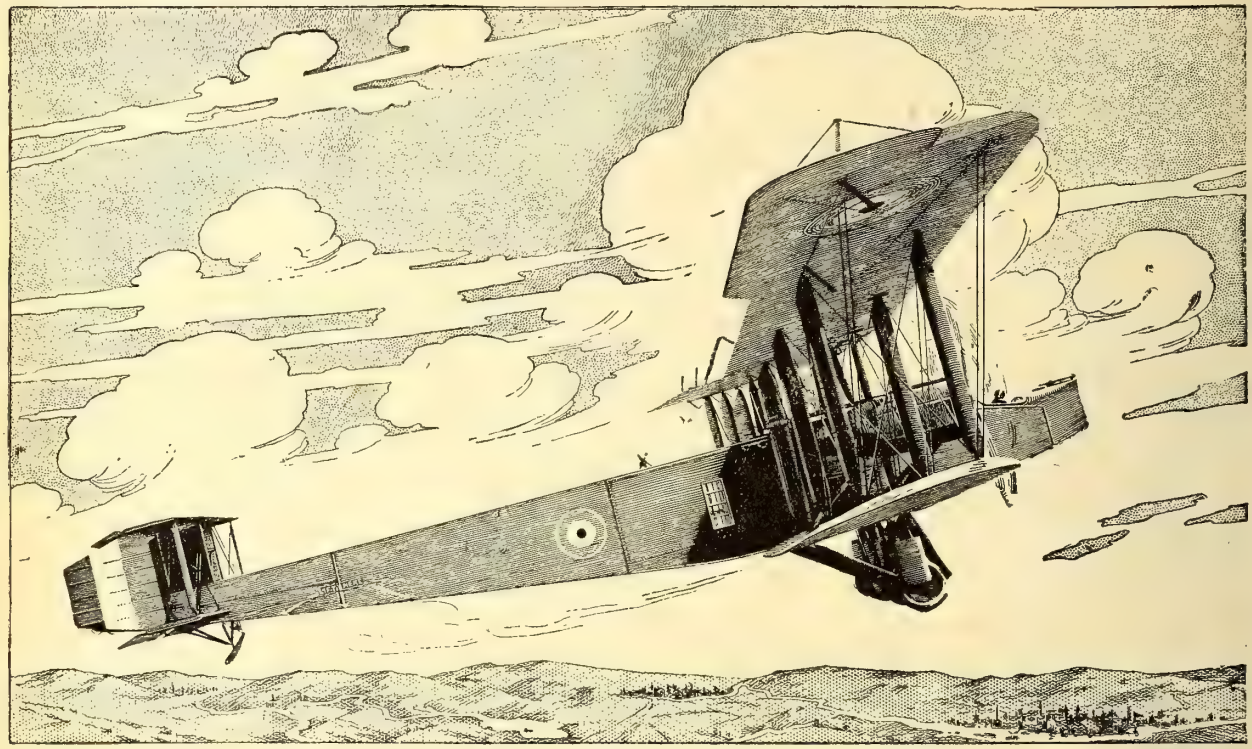
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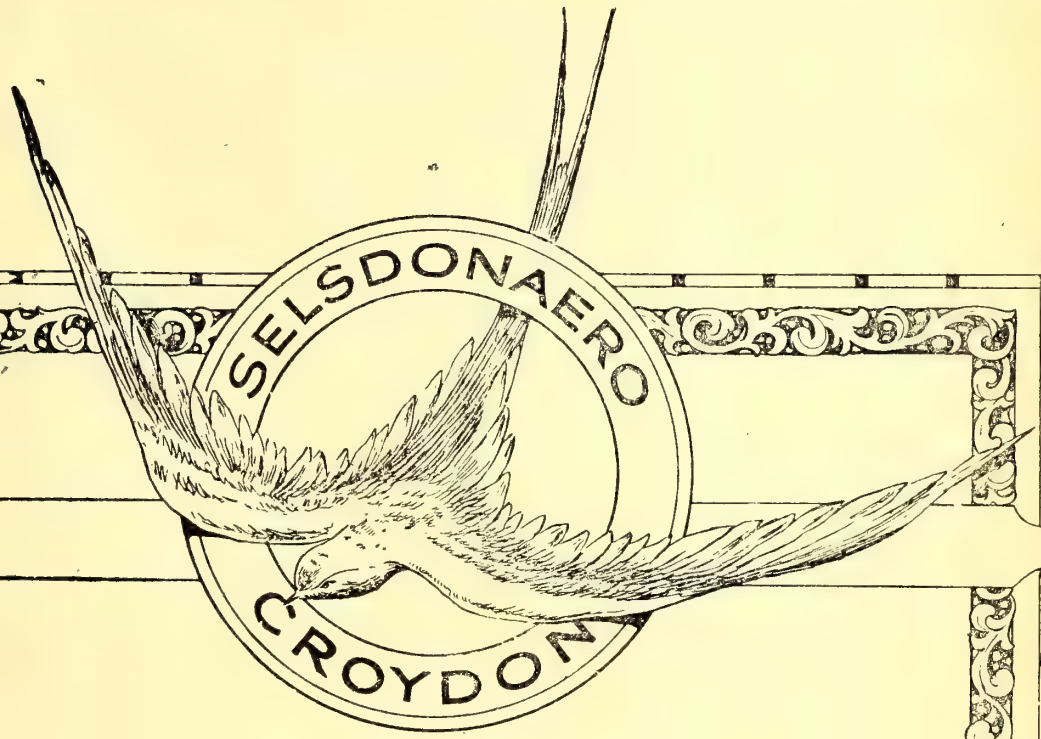


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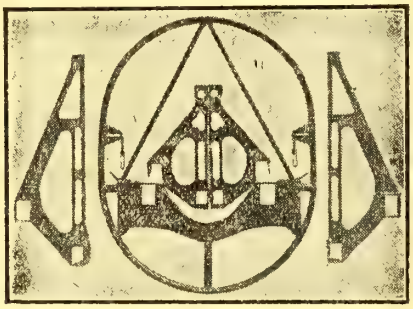



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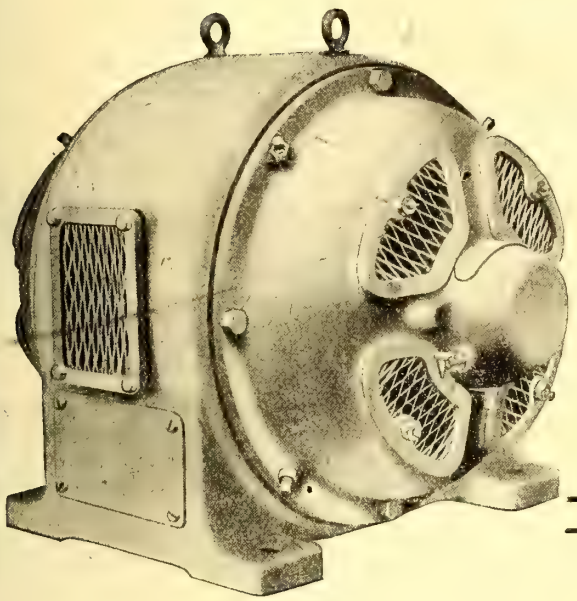
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Vickers, Ltd., Imperial Court, Basil Street, Knightsbridge. S.W.3 "Vickerfyta, Knights, London." Kensington 6810.

Waring & Gillow, Ltd., Hammersmith. "Warisen, Ox, London." Museum 5000.

Westland Aircraft, Yeovil. "Aircraft, Yeovil." Yeovil 129.

White, J. Samuel, & Co., Ltd., East Cowes. "White, East Cowes." Cowes 3.

Whitehead Aircraft (1917), Ltd., Richmond, Surrey. "Whitecraft, Richmond, Surrey." Richmond 1780-1.

Witton & Witton, 143, Fonthill Road, Finsbury Park, London, N.4. North 2110.

Wycombe Aircraft Constructors, Ltd., High Wycombe, Bucks. "Aircraft, High Wycombe." High Wycombe 84.

Airships—

Airships, Ltd., High Street, Merton. Wimbledon 1314.

Short Bros., Rochester, Eastchurch, and Whitehall House, S.W. "Tested, 'Phone, London." Regent 378.

Aluminium Castings (Sand and Die)

Coan, R. W., 219, Goswell Road, London, E.C.1. "Krankases, Isling, London." City 3846.

Bent Timber Parts—

Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.

The Atlas Bedstead Company, Bilston. "Atlas, Bilston." Phone No. 8 and 51.

Bearings (Etonia Cast Phosphor Bronze)

Yorkshire Engineering Supplies, Ltd., Wortley, Leeds. "Yes, Leeds." Central 3927.

Blowpipes (Oxy-Acetylene)—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic. 4830.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Vic. 3540 (3 lines).

Books (Aero Engines).

Dykes' Auto Encyclopedia, Gillam Dome Buildings, Richmond, Surrey

Brass Sheets for Tipping Propellers—

Pritt & Co., 46, Fenchurch Street, London, E.C.3 "Poetry, Fen, London." Avenue 995, 900, and 7996.

Buildings—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey. Wimbledon 1313.

Rubery, Owen, & Co, Darlaston, South Staffs.

The Wilfley Co., Ltd, Salisbury House, London Wall, E.C.2. "Wrathless, 'Phone, London." City 2681-2.

Cable Coverings and Cable Controls—

The Bowden Brake Co., Ltd., Tyseley, Birmingham. "Bowden, Acock's Green." Acock's Green 103 & 104.

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Carburettors—

Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2. Victoria 4670.

Casein—

Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C 3. "Suricodon, Fen, London." Avenue 34 and 35

Celluloid (Non-Flam.)—

Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London." Central 1306-7.

Clothing—

Burberry's, Ltd., Haymarket, S.W.1. Regent 2165.

Dunhill's, Ltd, Euston Road, N.W.1. "Dunsend, London." North 3405-6.

Coloured Rags—

Joseph, A., Earl Street, London Road Southwark, S.E.1. "New Mongo Sedist, London." Hop 83, 361, 4272.

Component Parts—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (4 lines).

Central Aircraft Co., High Road, Kilburn, N.W.6 "Aviduction Phone, London." Hampstead 4403 & 4404.

P.D.V. Aircraft Co., Ltd., Princes Street, Richmond. "Aeros, Richmond" Richmond 1681.

Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros., Bilston." Bilston 10.

Cords, Tapes, and Threads—

MacLennan, J., & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Dopes—

British Aeroplane Varnish Co., Ltd., 166, Piccadilly, W.1. "Tetrafree, Piccy, London." Gerrard 2312.

British Cellulose Co., 8, Waterloo Place, S.W.1. "Cellutate, London." Regent 4046.

The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.

Cellon, Ltd., 22, Cork Street, London, W.1. "Ajawb, Reg, London." Gerrard 440.

Engines and Parts—

Allen, W. H., & Co., Ltd., Bedford. "Pump, Bedford." Bedford No. 1.

Arrol-Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.

The Beatty School of Flying, Ltd., The Broadway, Cricklewood, N.W.2. Hampstead 3000.

Engines and Parts—

Beardmore Aero Eng., Ltd., 112, Great Portland Street, W 1. "Beardmore, London." Gerrard 238.

Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W.1. "Aeroflight, Vic, London." Vic. 7026.

Gordon Watney & Co., Ltd., Weybridge. "Mercédès, Weybridge" Weybridge 550 (7 lines).

Green Engine Co., Ltd., Twickenham. Richmond 1203.

Gwynnes, Ltd., Hammersmith, W. "Gwynne, Hammersmith." Hammersmith 1910.

Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London" Gerrard 8926.

Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1654-5-6.

Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton." Wolverhampton 985.

The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1. "Elevenfold, London." Walthamstow 811 (2 lines).

Electrical Accessories—

Belling & Co., Montagu Road, Upper Edmonton, N.18. "Belling, Edmonton." Tottenham 1084.

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.

Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Eusroad, London." Museum 70.

Premier Electric Heaters, Ltd., 258, 259, and 360, Bradford Street, Birmingham. "Fahrenheit, Birmingham." Midland 981.

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Electric Cables—

E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 24X.

Johnson & Phillips, Ltd., Charlton, London. S.E.7. "Juno, London" Central 2207; London Wall 1564.

Electric Lighting and Power—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.

Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Eusroad." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—

W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines).

Flare Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flexible Shafts—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Fluxes—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools—

Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton." Bournemouth 1160.

Cambridge School of Flying and Aerodrome Co., 308, St Andrews Street, Cambridge. "Carbon, Cambridge." Cambridge 5 and 1086.

Furniture (Office)—

Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2. London Wall 573 and 6179.

Galvanising—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

Gauges—

J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17.

Gears—

Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham. "Mosgear, Birmingham." East 407.

· Buyers' · Guide.



Glue—

Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Bececolin, Cannon, London." City 1206.

Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Wapp, London." Avenue 3178.

Meudine Co., 8, Arthur Street, E.C. Bank 5873.

Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3.

Goggles—

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Hack Saw Blades and Machines—

Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880.

Heating and Ventilating—

Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 372 (2 lines).

Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).

The Thames Bank (Blackfriars) Iron Co., Ltd., Upper Ground Street, London, S.E.1. "Hot Water, Friars, London." Hop 763.

Hollow Spars—

McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718

Instruments—

British Wright Co, Ltd., 33, Chancery Lane, W.C.2 Holborn 1208.

Instruments (Scientific, Altimeters, etc.)—

The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.

Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17 "Aneroid, Phone, London." Walthamstow 180.

Leather Cloth—

New Pegamoid, Ltd, 134, Queen Victoria Street, London. "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch" Redditch 61.

Magnetos—

The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1 "Vicksmag, Phone, London" Museum 430.

The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.

The M-L Magneto Syndicate, Ltd., Coventry. 'Corlton, Coventry." Coventry 1008-1009.

Metal Manufacturers—

Clifford, Chas., & Sons, Ltd., Birmingham. "Clifford, Birmingham." Central 42-43. Avenue 1432.

Metals in General—

Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.

Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London." City 6342.

Metal Parts and Fittings—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).

Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4959.

Aircraft Supplies Co, Ltd., Ascol House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).

Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.

Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton 1041.

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).

British Metal (Kingston), Ltd., Kingston-on-Thames.

Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3 Avenue 1432.

Lombard Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).

Metal Parts and Fittings—

Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing. Eusroad, London." Museum 70.

Mountford, Fredk, Lt., Lifford, Birmingham. "Fremo, Birmingham." King's Norton 261.

Rubery Owen & Co., Darlaston, South Staffs

Sankey, Joseph, & Sons, Ltd, Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.

The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.

The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston." Bilston 10.

Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—

Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford." Keynsham 21.

Metal Spinnings—

Arnold & Sons, Lawrence Road, Tottenham, N.15.

Metric Bolts—

Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.

Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—

Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.

Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines).

British Metal (Kingston), Ltd., Kingston-on-Thames.

Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.

Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham." Central 793.

MacLennan, J., & Co, 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—

Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.

Mann, Egerton & Co., Ltd, 374/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.

Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines)

Nameplates and Labels—

British Metal (Kingston), Ltd., Kingston-on-Thames

The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Oils—

C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2 "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—

E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London." London Wall 3266-3267.

Pattern Making—

Fredk. Ward, 6, 7 and 8, Allsop Street, Upper Baker Street, W. Padd. 4743.

Piston Rings—

British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.

The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.

Allen & Simmonds, Ltd., Reading.

Plating, Nickel Silver and Electro Tinning—

Arnold & Sons, Lawrence Road, Tottenham, N.15.

Power Presses and Dies—

Bliss, E. W., & Co., 2a, Pocock Street, Blackfriars Road, London, S.E.1. "Blissdon, London." Hop. 4340.

Presswork—

Rubery Owen & Co., Darlaston, South Staffs.

Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Propellers—

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)

Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.

Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames. "Ebora, Kingston." Kingston 672.

Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104.

Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521

Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).

Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." 24214 Leeds.

Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.

Westland Aircraft, Yeovil. "Aircraft, Yeovil. Yeovil 129.

Propeller Cases—

The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—

The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—

Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rigging for Aircraft—

Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466

Rubber Tubing & Accessories—

Hancock, James Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Masticator, Isling, London." City 3811 and 3812.

Screw-driving Machines—

Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Inventors, Redditch." Redditch 74.

Seaplane Manufacturers—

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).

Gosport Aircraft Co., Gosport. "Flight, Gosport" Telephone No. 217.

Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).

Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.

Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Southampton 1337.

Seats for Aeroplanes—

Bowser, E., 50, Park Lane, Leeds Leeds 21053.

Searchlights & Landing Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London."

Shackles— Willesden 2480.

British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—

Accles & Pollock, Ltd, Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).

Arnold & Sons, Lawrence Road, Tottenham, N.15.

Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345.

W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 660.

British Metal (Kingston), Ltd., Kingston-on-Thames.

London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.

Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—

The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London." Vic 4830.

Arnold & Sons, Lawrence Road, Tottenham, N.15.

British Metal (Kingston), Ltd., Kingston-on-Thames [Staffs.

Rubery Owen & Co., Darlaston, South

The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.

Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

BUYERS' GUIDE cont. on next page.



The Aeroplane

Acceptance and Experimental Flights—
The Prodger Isaac Aviation Co. "Aeromnia, Piccy, London." Gerrard 278 (2 lines).

Acetylene Welding Plant—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic 4830
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Aeroplane Manufacturers—
Aircraft Manufacturing Co., Ltd., Hendon. "Airmanship, Hyde, London." Kingsbury 220.
Armstrong, Sir W., Whitworth & Co., Ltd., Newcastle - on - Tyne "Armstrong Aviation, Newcastle-on-Tyne." Gosforth 500.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.
British & Colonial Aeroplane Co., Ltd. (The Bristol Co.), Filton, Bristol. "Aviation, Bristol." Bristol 1006.
British Caudron Co., Ltd., Broadway, Cricklewood, N.W.2 "Caudroplah, Crickle, London." Hampstead 1551.
Central Aircraft Co., High Road, Kilburn, N.W.6. "Aviduction, Phone, London." Hampstead 4403 and 4404
Davidson Aviation Co., Ltd., Hammersmith, W.6. Hammersmith 1992 (3 lines).
Dawson, John, & Co., Ltd., Newcastle-on-Tyne "Dependable, Newcastle-on-Tyne" Central 2604 (2 lines).
Eastbourne Aviation Co., Ltd., Eastbourne. "Aircraft, Eastbourne" Eastbourne 1176
Grahame-White Aviation Co., Ltd., London Aerodrome, Hendon. "Volplane, Hyde, London." Kingsbury 120.
Handley Page, Ltd., 170, Cricklewood Lane, N.W.2. "Hydrophid, Crickle, London." Hampstead 7420
Hooper & Co., Ltd., 54, St. James St., Piccadilly, London, S.W. "Sociable, St. James, London" Regent 612.
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).
Martinsyde Ltd., Brooklands, Byfleet, "Martinsyde, Weybridge." Woking 331; Byfleet 171
National Aircraft Manufacturing Co., Ltd., 15, Drummond Crescent, Seymour Street, Euston. Museum 3373.
"Nieuport" & General Aircraft Co., Cricklewood, London, N.W.2. "Nieuscout, Crickle, London" Willesden 2455.
The Regent Carriage Co., Ltd., 126/132, New King's Road, Fulham, S.W.6 "Carbodis, London." Putney 2240-2241.
Roe, A. V., & Co., Ltd., Manchester. "Triplane, Manchester" City 8158-8331, Manchester.
Saunders, S. E., Ltd., East Cowes, I.O.W. "Consuta, East Cowes" Cowes 193.
Short Bros, Rochester, Eastchurch and Whitehall House, S.W. "Tested, Phone, London." Regent 378.
Sopwith Aviation Co., Ltd., Kingston-on-Thames "Sopwith, Kingston" Kingston 1088 (8 lines)
Standard Aircraft Manufacturing Co., 28, Bow Common Lane, E. East 2851
Tarrant, W. G., Byfleet, Surrey "Tarrant, Byfleet" Byfleet 1, 2 & 3.
Thames Aviation Works, 141, Curtain Rd., E.C.2. London Wall 9766
Vickers, Ltd., Imperial Court, Basil Street, Knightsbridge, S.W.1 "Vickerfyta, Knights, London" Kensington 6810.
Waring & Gillow, Ltd., Hammersmith. "Warisem, 6x, London" Museum 5000.
Westland Aircraft, Yeovil. "Aircraft, Yeovil" Yeovil 129.
White, J. Samuel, & Co., Ltd., East Cowes. "White, East Cowes." Cowes 3.
Whitehead Aircraft (1917), Ltd., Richmond, Surrey. "Whitecraft, Richmond, Surrey." Richmond 1780-1.
Witton & Witton, 141, Fonthill Road, Finsbury Park, London, N. North 2110.
Wycombe Aircraft Constructors, Ltd., High Wycombe, Bucks. "Aircraft, High Wycombe." High Wycombe 84.

Airships—
Airships, Ltd., High Street, Merton. Wimbledon 1314.
Short Bros, Rochester, Eastchurch, and Whitehall House, S.W. "Tested, 'Phone, London" Regent 378

Aluminium Castings (Sand and Die)
Cuan, R. W., 219, Goswell Road, London, E.C.1. "Krankases, Isling, London" City 3640.

Bent Timber Parts—
Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496.
Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough" Market Harborough 15
The Atlas Bedstead Company, Bilston "Atlas, Bilston" Phone No 8 and 51.

Bearings (Etonia Cast Phosphor Bronze)
Yorkshire Engineering Supplies, Ltd., Wortley, Leeds. "Yes, Leeds." Central 3927.

Blowpipes (Oxy-Acetylene)—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic. 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Vic. 3540 (3 lines).

Books (Aero Engines).
Dykes' Auto Encyclopedia, Gillam Dome Buildings, Richmond, Surrey

Brass Sheets for Tipping Propellers—
Pritt & Co., 46, Fenchurch Street, London, E.C.3 "Poetry, Fen, London" Avenue 995, 996, and 7996.

Buildings—
Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.
Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey. Wimbledon 1313
Rubery, Owen, & Co., Darlaston, South Staffs
The Wilfley Co., Ltd., Salisbury House, London Wall, E.C.2. "Wrathless, 'Phone, London." City 2681-2.

Cable Coverings and Cable Controls—
The Bowden Brake Co., Ltd., Tyseley, Birmingham. "Bowden, Acock's Green" Acock's Green 103 & 104.
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Carburettors—
Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2. Victoria 4070.

Casein—
Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C. 3. "Suricodon, Fen, London." Avenue 34 and 35

Celluloid (Non-Flam.)—
Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London." Central 1306-7.

Clothing—
Burberry's, Ltd., Haymarket, S.W.1. Regent 2165.
Dunhill's, Ltd., Euston Road, N.W.1. "Dunsend, London." North 3405-6.

Coloured Rags—
Joseph, A., 11, Earl Street, London Road Southwark, S.E.1. "New Mongo Sedist, London" Hop 83, 361, 4272

Component Parts—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (4 lines).
Central Aircraft Co., High Road, Kilburn, N.W.6 "Aviduction, Phone, London." Hampstead 4403 & 4404.
P D V. Aircraft Co., Ltd., Princes Street, Richmond. "Aeros, Richmond" Richmond 768r.
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros, Bilston" Bilston 10.

Cords, Tapes, and Threads—
MacLennan, J., & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Dopes—
British Aeroplane Varnish Co., Ltd., 166, Piccadilly, W.1. "Tetrafrec, Piccy, London" Gerrard 2312.
British Cellulose Co., 8, Waterloo Place, S.W.1 "Cellutate, London." Regent 4046.
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London" Gerrard 280
Cellon, Ltd., 22, Cork Street, London, W.1. "Ajawb, Reg, London" Gerrard 440.

Engines and Parts—
Allen, W. H., & Co., Ltd., Bedford. "Pump, Bedford" Bedford No 1
Arrol-Johnston, Ltd., Dumfries. "Mocar, Dumfries" Dumfries 251-252
The Batty School of Flying, Ltd., The Broadway, Cricklewood, N.W.2 Hampstead 3000.

Engines and Parts—
Beardmore Aero Eng., Ltd., 112, Great Portland Street, W.1. "Beardmore, London" Gerrard 218.
Dudbridge Iron Works, Ltd (Salmson), 87, Victoria Street, London, S.W.1 "Aeroflight, Vic, London." Vic. 7026.
Gordon Watney & Co., Ltd., Weybridge. "Mercedès, Weybridge" Weybridge 550 (7 lines).
Green Engine Co., Ltd., Twickenham. Richmond 1203.
Gwynnes, Ltd., Hammersmith, W. "Gwynne, Hammersmith." Hammersmith 1910.
Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London" Gerrard 8026.
Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1634-6.
Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton" Wolverhampton 985
The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1. "Elevenfold, London." Walthamstow 811 (2 lines).

Electrical Accessories—
Belling & Co., Montagu Road, Upper Edmonton, N.18. "Belling, Edmonton" Tottenham 1084.
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2267; London Wall 1564.
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Eusroad, London." Museum 70.
Premier Electric Heaters, Ltd., 258, 259, and 360, Bradford Street, Birmingham. "Fahrenheit, Birmingham." Midland 081
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2180.

Electric Cables—
E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 198.
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2267; London Wall 1564.
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W. "Installing, Eusroad." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—
W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines).

Flare Lights—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London" Victoria 3540 (3 lines).

Flexible Shafts—
Herbert Terry & Sons, Ltd., Redditch "Springs, Redditch." Redditch 61.

Fluxes—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools—
Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton." Bournemouth 1160.
Cambridge School of Flying and Aerodrome Co., 308, St Andrews Street, Cambridge. "Carbon, Cambridge." Cambridge 5 and 1086.

Furniture (Office)—
Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2. London Wall 573 and 6179.

Galvanising—
Boulton & Paul, Ltd., Rose Lane, Norwich "Aviation, Norwich." Norwich 851.

Gauges—
J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17

Gears—
Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham. "Mosgear, Birmingham" East 407.



Buyers' Guide

Glue—
Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Boscolin, Cannon, London." City 1206
Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid) "Exeroidin, Wapp, London." Avenue 3178.
Meubne Co., 3, Arthur Street, E.C. Bank 5873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3

Goggles—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Hack Saw Blades and Machines—
Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880.

Heating and Ventilating—
Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 172 (2 lines).
Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).
The Thames Bank (Blackfriars) Iron Co., Ltd., Upper Ground Street, London, S.E.1. "Hot Water, Friars, London." Hop 763.

Hollow Spars—
McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2 Holborn 1108.

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge "Instrument, Cambridge." Cambridge 282
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17 "Aneroid, Phone, London." Walthamstow 180

Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch" Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1 "Vicksmag, Phone, London" Museum 430.
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry." Coventry 1008-1009.

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham. "Clifford, Birmingham" Central 42-43. Avenue 1432

Metals in General—
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.
Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London" City 6132.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London."
Aircraft Supplies Co., Ltd., Ascot House, 135, Long Acre, W.C.2 "Upcast, Rand, London." Gerrard 276 (2 lines).
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton 1041
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3. Avenue 1432.
Lombard Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).

Metal Parts and Fittings—
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Eusroad, London." Museum 70.
Mountford, Fredk., Lt., Lifford, Birmingham. "Fremo, Birmingham" King's Norton 261
Rubery Owen & Co., Darlaston, South Staffs
Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.
The Fulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selsero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2180.
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston" Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Salt-ford." Keynsham 21.

Metal Spinnings—
Arnold & Sons, Lawrence Road, Tottenham, N.15.

Metric Bolts—
Cashmore Bros, Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.
Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1 "Imbrowned, Bethroad, London." London Wall 6100.
Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham." Central 793.
Maclennan, J., & Co., 30, Newgate Street, E.C.1, and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 251-252.
Mann, Egerton & Co., Ltd., 57-581, Euston Road, London, N.W.1. "Manegear, Eusroad, London." Museum 70
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines)

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1 "Shatterlys, Piccy, London" Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2 "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London" London Wall 3266-3267.

Pattern Making—
Fredk. Ward, 6, 7 and 8, Allsop Street, Upper Baker Street, W. Padd. 4743.

Piston Rings—
British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.
Allen & Simmonds, Ltd., Reading.

Plating, Nickel Silver and Electro Tinning—
Arnold & Sons, Lawrence Road, Tottenham, N.15.

Power Presses and Dies—
Bliss, E. W., & Co., 2a, Pocock Street, Blackfriars Road, London, S.E.1. "Blissdon, London." Hop. 4340.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds" Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 21 & 22, Surbiton Park Terrace, Kingston-on-Thames. "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104.
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge" Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." 24214 Leeds.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil." Yeovil 129.

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 166

Rubber Tubing & Accessories—
Hancock, James Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Masticator, Isling, London" City 3811 and 3812.

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch "Invertors, Redditch." Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).
Gosport Aircraft Co., Gosport. "Flight, Gosport" Telephone No. 217.
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton" Southampton 1337.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds Leeds 21053.

Searchlights & Landing Lights—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London" Willesden 2180.

Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow" Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Arnold & Sons, Lawrence Road, Tottenham, N.15.
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 660.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London" Vic 4830.
Arnold & Sons, Lawrence Road, Tottenham, N.15.
British Metal (Kingston), Ltd., Kingston-on-Thames (Staffs
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Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines)

BUYERS' GUIDE cont. on next page.

"The Aeroplane" Buyers' Guide.—*continued.*

Small Tools—
The Small Tool Supply Co., Ltd., Avenue Chambers, Southampton Row, W.C. "Prosait, West-Cent., London." Museum 2655.

Sparking Plugs—
Lodge Sparking Plug Co, Ltd, Rugby. "Igniter, Rugby." Rugby 235.
Ripault, Leo. & Co., Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

Springs—
Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 122.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Stampings—
Arnold & Sons, Lawrence Road, Tottenham, N.15.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3. Avenue 1432.

Steel—
Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 to 3237.
Guthrie, J. B., & Son, 30, St Mary Axe, E.C.3. Avenue 1432.
Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham." Smithwick 224.

Steel Stamps and Markings—
John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).

Taper Pins—
Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—
MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Timber—
Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526.
Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.
J. Owen & Sons, Ltd., 109a, Borough High Street, S.E.1. "Bucheron, London." Hop 3811 (2 lines).

Time Recorders—
Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles— Staffs.
Rubery Owen & Co., Darlaston, South
Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W "Installing, Eusroad." Museum 70 (4 lines).

Tyres and Wheels—
The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent." Gerrard 1214 (5 lines).

Undercarriages—
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.
Harland, W., & Son, Merton, London, S W.19. "Harland, Wimbledon 45." Wimbledon 45 and 1395.
Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—
Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95. Avenue. 1432.

Washers—
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Watchmakers and Jewellers—
(Silver Models)—
Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines).

Welding and Cutting Plant—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma Vic, London." Vic 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Welding Repairs—
Arnold & Sons, Lawrence Road, Tottenham.
Barimar, Ltd, 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.
The New Welding Co., 26, Rosebery Avenue, London, E.C.1. "Windoneeda, Holb, London." Holborn 5252.
Imperial Light, Ltd, 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Wind Shields—
Auster, Ltd., 133, Long Acre, W.C. "Winflector, London." Regent 5910.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesdon Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Wire Gauze—
Greening, N., & Sons, Ltd., 16, Finsbury Street, London, E.C.2. "Setscrew, Finsquare, London." London Wall 1082.
Guthrie, J. B., & Son, 30, St. Mary Axe, E.C.3. Avenue 1432.

Wires and Cables—
Bruntons, Musselburgh, Scotland. "Wiremill, Musselburgh." Musselburgh 28.
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466 (3 lines).

Wirework—
Terry, Herbert, & Sons Ltd., Redditch. "Springs, Redditch." Redditch 61.

Woodworking Machinery—
Robinson, Thomas, & Son, Ltd., Rochdale. "Robinson, Rochdale." Rochdale 467.
Sagar, J., & Co., Ltd., Halifax. "Sawtooth, Halifax." Halifax 136.
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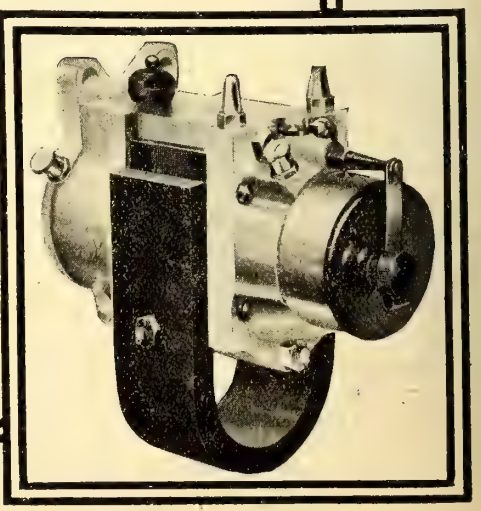
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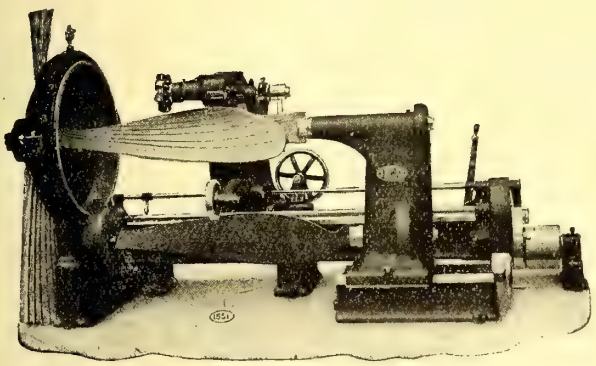
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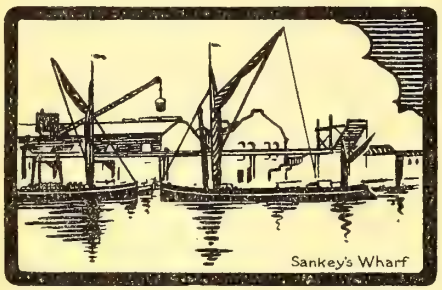
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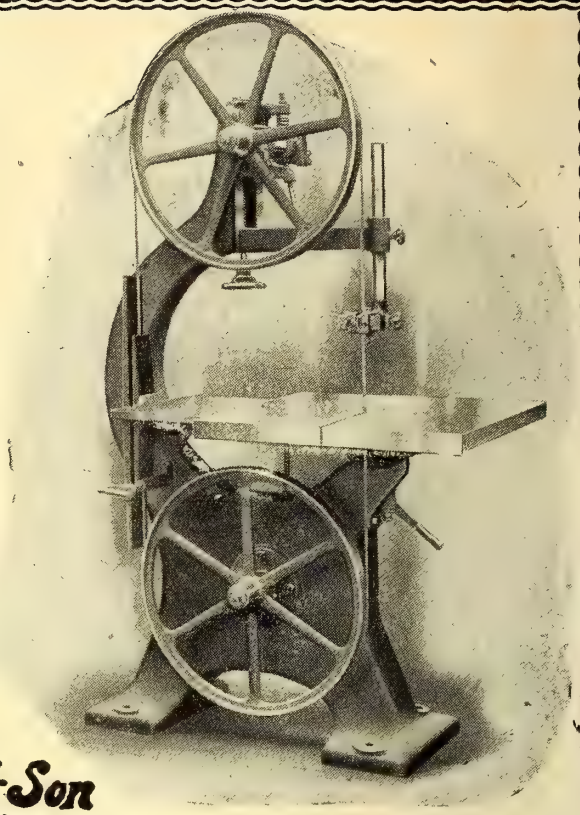
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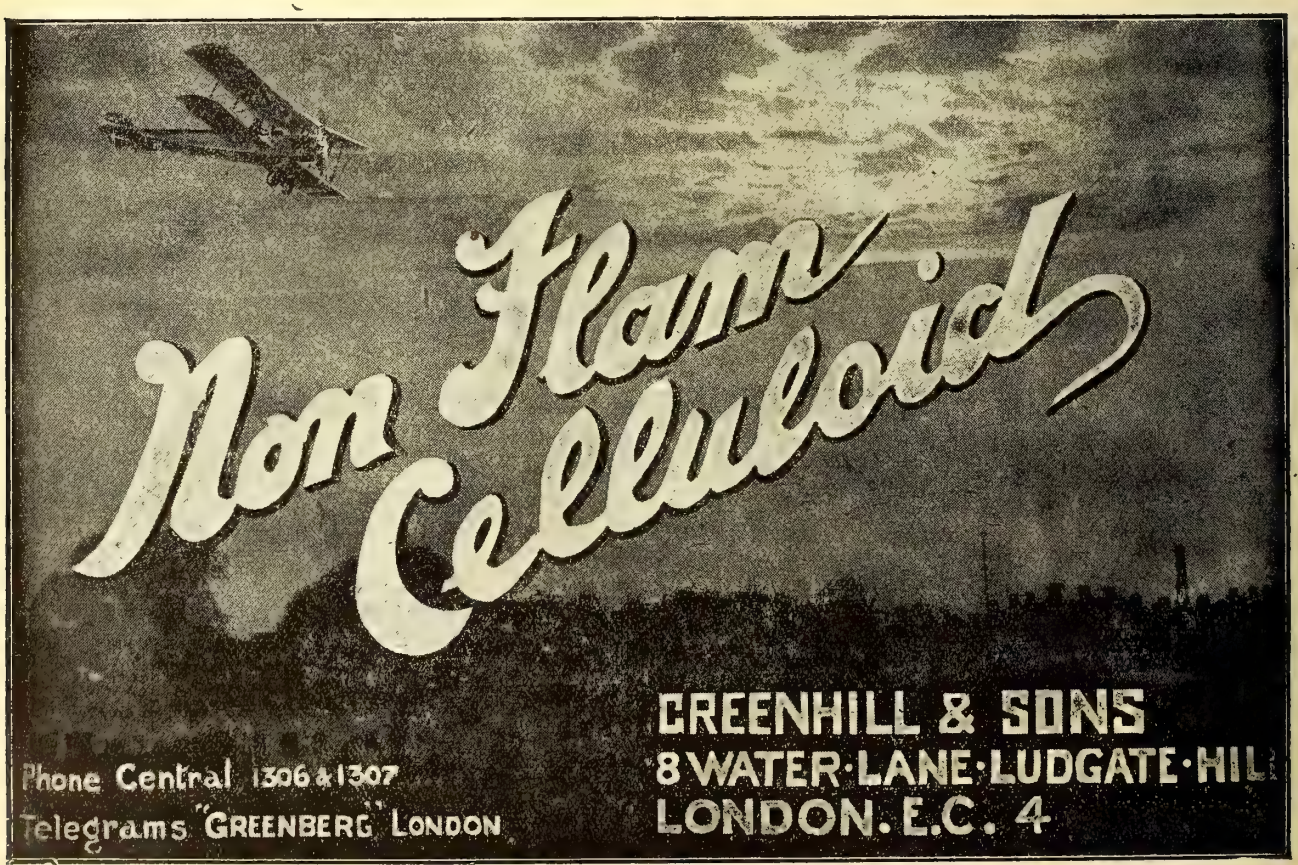
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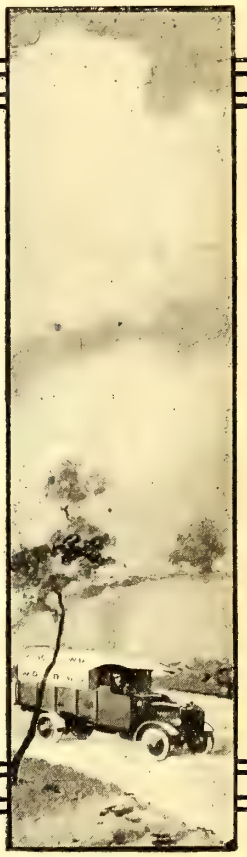
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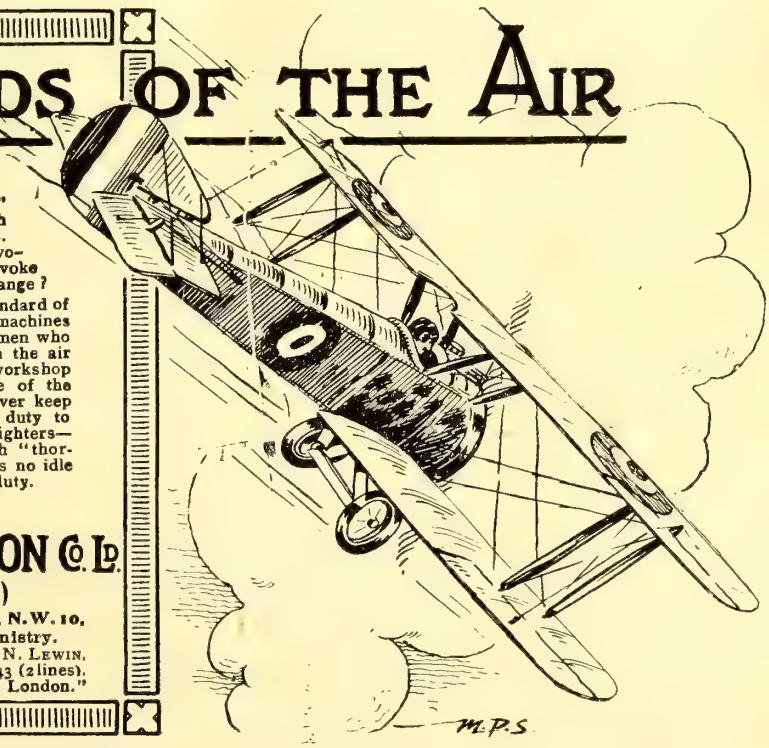
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pump case during these tests varied between 15 and 20 lbs. per square inch, and the leakage of oil and petrol past the end bearing of the pump spindle during one hour's run was approximately one pint.

TESTS THROUGH ENGINE DELIVERY JETS.

In the engine the petrol is delivered through restricting jets (shown in Fig. 35) into the constant-level tanks, which feed the jet chambers below, and are provided with overflows to the main petrol tank.

In the tests both outlets of the pump were connected by a Y piece with one delivery pipe, the end of which was closed by a plate 1-16 in. in thickness, having two 0.07 diameter jet holes drilled through.

The petrol pump was run at the three speeds as in the former tests, and the following results recorded of delivery and head resistance :—

R.P.M.	Head resistance.	Pints per hour.
550	4.5 lbs.	160 pints.
800	9 lbs.	218 pints.
1275	25 lbs.	360 pints.

STARTING GEAR.

The principle of the Maybach starting gear is now so well known that only a brief description of the mechanism and a few details of the construction will be necessary.

In the semi-diagrammatic cross-sectional drawing of the engine, Fig. 00, the working principles of this simple and distinctive starting mechanism are clearly shown. By the depression of the hand lever A on the induction side of the engine, all the tappets are lifted off their cams through the action of small lugs formed on the top of the tappets, which fit into slots cut in the tubular lay shafts BB. All the valves, both inlet and exhaust, are thus opened in the cylinder heads; and at the same time the hand lever A closes the shutter C in the exhaust manifold by the connection of levers shown in the drawing. The valves and exhaust shutter are then locked in this position by a peg, which is inserted in two holes D, which now coincide in the hand lever A. By the action of a large hand suction pump E in the pilot's seat, gas is then drawn into the combustion chambers through the inlet valves and induction pipe from the carburettors as indicated in the diagram. When the cylinders are charged the valves are returned to their normal positions by the withdrawal of the locking pin in the hand lever A, and simultaneously the free passage in the exhaust manifold is again opened by the shutter C. Ignition is then effected by means of a Bosch hand-starter magneto in the pilot's seat. It will be noticed that the exhaust shutter lever is provided with a spring-loaded tie rod to ensure a true seating for the shutter. In order to prevent the engine from being started until the hand lever has been released to its off position, the locking hole in the lever which takes the pin is made in such a way that only a special form of locking pin can be used. For this purpose the handle of the starting magneto is made easily detachable, and is used for the purpose of locking the hand lever A. It is thus practically impossible to cause ignition with the valves open and the exhaust passage closed, which, of course, would cause firing back into the carburettors, and probably also result in destroying the hand pump.

ENGINE TEST REPORT AT R.A.E. 5-4-18.

CALIBRATION AND ENDURANCE TESTS.

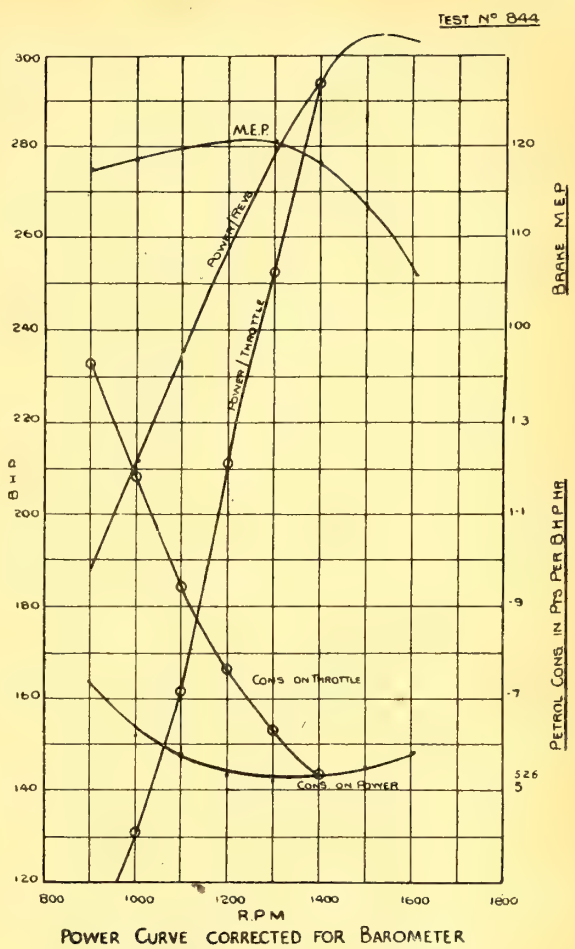
The Maybach engine (No. 1261), after several slight repairs had been carried out to the cylinders and propeller hub flange and coupling, was erected on a test bed, coupled to a Heenan and Froude dynamometer, and submitted to the following power and consumption tests, including a one hour's duration test at normal speed. The results of the calibration tests are as follows :—

R.P.M.	1,200	1,300	1,400	1,500
B.H.P.	258	279	294.5	304.5
Brake, M.E.P. ...	120.5	120.3	118	113.9
Petrol consumption in pints b.h.p. hour	0.53	0.52	0.526	0.545

The results of these tests are shown graphically on the diagram (Fig. 46).

ONE HOUR TEST.

At the conclusion of the above tests a run of one hour's duration at normal revolutions (1,400 r.p.m.) was carried out with the following results :—



POWER CURVE CORRECTED FOR BAROMETER

Fig. 46.—Calibration Curves. R.A.E. Tests.

Average b.h.p.	290
Petrol consumption ...	20 gallons = 0.55 points per b.h.p. hour.
Oil consumption	11 pints = 0.038 pints per b.h.p. hour.
Oil pressure	5 lbs./sq. in.
Oil temperature	67°C.
Water temperature (inlet)	57°C.
Water temperature (outlet)	68°C.

VALVE TIMING DURING TESTS.

Inlet.	Exhaust.
O. 8°E.	O. 33°E.
C. 35°L.	C. 7°L.
Magneto advance	38°E.

Running was steady at all speeds between 900 and 1,400 r.p.m., but owing to the fact that the propeller hub flange on the crankshaft was damaged, and was running slightly out of truth, the vibration became excessive above 1,400 r.p.m.

Considerable trouble was experienced with the water connection between the cylinders on the exhaust side. The running became unsteady below 900 r.p.m.

DISTRIBUTION.

Owing to the exhaust manifold being fitted as part of the engine starting gear, it was not possible to form an idea of the distribution.

A diagram of the inlet and exhaust valve lift is shown graphically in Fig. 47.

F. G. C. Ap.D. (L.).
May, 1918.
J. G. WEIR,
Lieut.-Colonel,
Controller, Technical Department.

GENERAL DATA.

Make of engine and rated h.p.	Maybach 300 h.p.
Type number	1261.
Number and arrangement of cylinders	Six vertical.
Bore	165.0 mm. = 6.50 ins.
Stroke	180.0 mm. = 7.09 ins.
Stroke/Bore ratio	1.09 : 1.
Area of one piston	213.825 sq. cm. = 33.2 sq. ins.
Total piston area of engine	1282.95 sq. cm. = 199.2 sq. ins.
Swept volume of one cylinder	3848.85 cu. cm. = 235.3 cu. ins.
Total swept volume of engine	23093.1 cu. cm. = 1412.0 cu. ins.
Clearance volume of one cylinder ...	778.9 cu. cm. = 47.54 cu. ins.
Compression ratio	5.95 : 1.

Normal b.h.p. and speed	294.0 b.h.p. at 1400 r.p.m.
Maximum b.h.p. and speed	304.5 b.h.p. at 1500 r.p.m.
Normal b.m.e.p	117.7 lbs. per sq. in. at 1400 r.p.m.
Maximum b.m.e.p.	120.5 lbs. per sq. in. at 1200 r.p.m.
Piston speed	1654.0 ft. per min. at 1400 r.p.m.
Mechanical efficiency (calculated)	86.0%
Indicated mean pressure (calculated)	137.0 lbs. sq. in.
Fuel consumption per b.h.p. hour	0.526 pint = 0.473 lbs.
Brake thermal efficiency	28.9%
Indicated thermal efficiency	33.6%
Air standard efficiency	51.0%
Relative efficiency	65.9%
Cu. in. of swept volume per b.h.p.	4.80 cu. ins.
Sq. in. of piston area b.h.p.	0.678 sq. in.
H.p. per cu. ft. of swept volume	360.0 b.h.p
H.p. per sq. ft. of piston area	212.4 b.h.p.
Direction of rotation of crankshaft	Anti-clockwise (facing propeller).
Direction of rotation of propeller	Anti-clockwise (facing propeller).
Type of valve gear	Overhead valve rockers and push rods.
Type of starting gear	Maybach of special design.
Number of carburettors	Two Maybach.
Bore of main jets	Variable from 0.0 to 2.5 mm.
Bore of pilot jets	Variable from 0.0 to 1.1 mm.
Fuel consumption per hour	19.33 gallons.

Valve Areas and Gas Velocities.

Diameters.	
Induction pipe	62.0 mm. = 2.44 ins.
Inlet port	45 × 67 mm. = 1.77 × 2.64 ins.
Exhaust port	45 × 67 mm. = 1.77 × 2.64 ins.
Exhaust branch pipes	66.0 mm. = 2.60 ins. (approx.).
Cross Sectional Areas.	
Induction pipe	29.26 sq. cm = 4.67 sq. ins.
Inlet port	30.15 sq. cm. = 4.67 sq. ins.
Inlet valve (π dh.)	4.416 sq. ins. (total).
Exhaust valve (π dh.)	4.366 sq. ins. (total).
Exhaust port	30.15 sq. cm. = 4.67 sq. ins.
Exhaust branch pipes	34.11 sq. cm. = 5.31 sq. ins.
Gas Velocities.	
Induction pipe	196.1 ft. per sec.
Inlet port	196.1 ft. per sec.
Inlet valve	208.0 ft. per sec.
Exhaust valve	210.0 ft. per sec.
Exhaust port	196.1 ft. per sec.
Exhaust branch pipes	172.5 ft. per sec.

Inlet Valves (Two per cylinder).

Outside diameter	54.0 mm. = 2.126 ins.
Port diameter (in cylinder head)	48.0 mm. = 1.89 in.
Width of seating	3.5 mm. = 0.137 in.
Angle of seating	30°
Radius under valve head	20.0 mm. = 0.787 in.
Lift of valve	9.45 mm. = 0.372 in.
Diameter of stem	11.0 mm. = 0.433 in.
Over-all length of valve	136.5 mm. = 5.373 ins.
Number of springs per valve	One.
Free length of spring	52.5 mm. = 2.066 in.
Length of spring in position (no lift)	39.5 mm. = 1.55 in.
Mean diameter of coils	51.0 mm. = 2.00 in.
Gauge of wire	No. 6 B.W.G.
Ratio length of spring/lift of valve	4.21 : 1.
Weight of valve complete with spring	0.843 lb.
Weight of spring bare	0.281 lb.
Inlet valve opens, deg. on crank	8° early.
Inlet valve closes, deg. on crank	35° late.
Period of induction	223°
Inlet tappet clearance	0.3 mm. = 0.012 in.

Exhaust Valves (Two per cylinder).

Outside diameter	54.0 mm. = 2.126 ins.
Port diameter (in cylinder head)	48.0 mm. = 1.89 in.
Width of seating	3.5 mm. = 0.137 in.
Angle of seating	30°
Radius under valve head	9.0 mm. = 0.354 in.
Lift of valve	9.34 mm. = 0.368 in.
Diameter of stem	11.0 mm. = 0.433 in.
Length of valve guide	80.0 mm. = 3.149 ins.



The arrangement of the 300 h.p. Maybach in the Rumpler biplane.

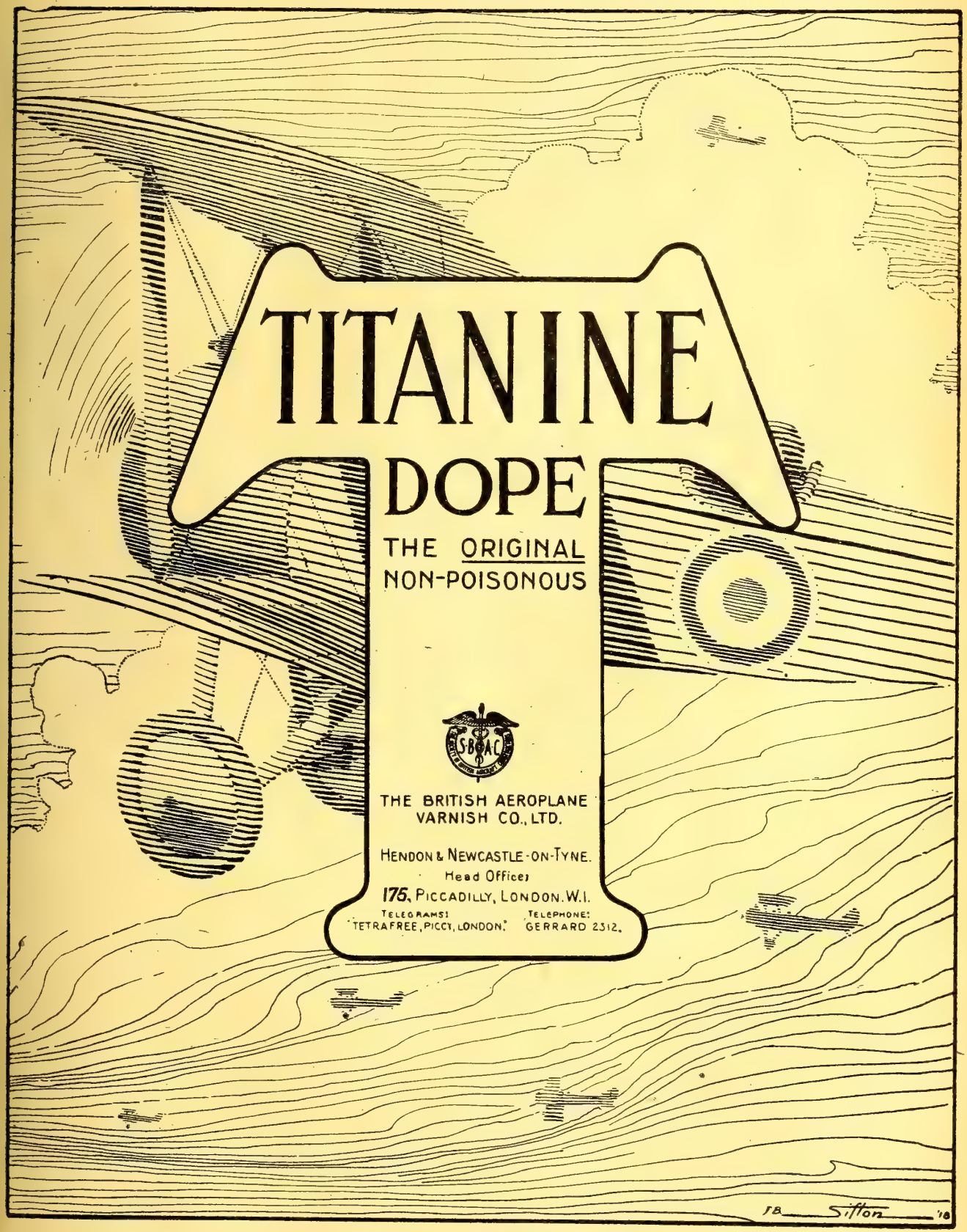
Over-all length of valve	152.5 mm. = 6.00 ins.
Number of springs per valve	One.
Free length of spring	52.5 mm. = 2.06 ins.
Length of spring in position (no lift)	39.5 mm. = 1.55 in.
Mean diameter of coils	51.0 mm. = 2.00 ins.
Gauge of wire	No. 6 B.W.G.
Ratio. Length of spring/lift of valve	4.21 : 1.
Weight of valve complete with spring	0.881 lb.
Weight of spring bare	0.281 lb.
Exhaust valve opens, deg. on crank	33° early.
Exhaust valve closes, deg. on crank	7° late.
Period of exhaust	220°
Exhaust tappet clearance	0.4 mm.

Inertia Forces, Bearing Loads, Etc.

Weight of piston, complete with rings and gudgeon-pin	14.05 lbs.
Weight per sq. in. of piston area	0.4235 lb.
Weight of connecting-rod complete	8.93 lbs.
Weight reciprocating part of connecting-rod	3.305 lbs.
Total reciprocating weight per cylinder	17.355 lbs.
Weight per sq. in. piston area	0.538 lb.
Length of connecting-rod (centres)	310.0 mm. = 12.20 ins.
Ratio. Connecting-rod/crank throw	3.445 : 1.
Inertia, lbs. sq. in. piston area, top centre	137.0 lbs. sq. in.
Inertia, lbs. sq. in. piston area, bottom centre	75.5 lbs. sq. in.
Inertia, lbs. sq. in. piston area, mean	53.25 lbs. sq. in.
Weight of rotating mass of connecting-rod	5.625 lbs.
Total centrifugal pressure	1106 lbs.
Centrifugal pressure, lbs. sq. in. piston area	34.4 lbs. sq. in.
Mean average fluid pressure, including compression	48.0 lbs. sq. in.
Mean average loading on crankpin bearing, total from all sources in terms of lbs. sq. in. piston area	118.0 lbs. sq. in.
Diameter of crankpin	66.0 mm. = 2.598 ins.
Rubbing velocity	15.85 ft. sec.
Effective projected area of big end bearing	43.23 sq. cm. = 6.70 sq. ins.
Ratio. Piston. area/projected area of big end bearing	4.96 : 1.
Mean average loading on big end bearing	585 lbs. sq. in.
Load factor on big end bearing	9270 lbs. ft. sec.

Cylinders.

Over-all height of bare cylinder from top of base chamber	479.5 mm. = 18.87 ins.
Depth of spigot at base of cylinder	3.5 mm. = 0.13 in.
Diameter of cylinder over water jacket	185.0 mm. = 7.28 ins.
Valve centres (between inlet and exhaust)	63.0 mm. = 2.48 ins.


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F.B. Sifton '18

Thickness of flange at base of cylinders	12.0 mm. = 0.47 in.
Number of holding-down studs per cylinder	Four.
Diameter of holding-down studs	19.0 mm. = 0.74 in.
Thickness of water jacket	1.0 mm. = 0.039 in.
Mean thickness of combustion chamber wall	8.0 mm. = 0.31 in.
Mean thickness of cylinder barrel	3.0 mm. = 0.11 in.
Tensile stress	6640 lbs. sq. in. (approx.) (Assumed maximum pressure 450 lbs. sq. in.)
Piston.	
Type of piston	Cast-iron (flat crown).
Diameter at top	164.25 mm. = 6.466 ins.
Diameter at bottom	164.75 mm. = 6.486 ins.
Length	151.00 mm. = 5.944 ins.
Ratio. Piston length/cylinder bore	0.914 : 1.
Number of rings per piston	Three piston rings, one scraper ring.
Position of rings	All above gudgeon-pin.
Width of rings	6.5 mm. = 0.255 in.
Gap of rings in cylinder	1.39 mm. = 0.055 in.
Connecting Rod.	
Length between centres	310.0 mm. = 12.205 ins
Ratio. Connecting rod/crank throw	3.44 : 1.
Little end bearing type	Floating cast-iron bush.
Floating bush, diameter, inside	38.0 mm. = 1.496 in.
Floating bush, diameter, outside	44.3 mm. = 1.743 in.
Floating bush, effective length inside	93.0 mm. = 3.661 ins.
Floating bush, projected area of bearing on gudgeon pin	35.35 sq. cm. = 5.48 sq. ins.
Ratio. Piston area/projected area of little end bearing	6.06 : 1.
Big end bearing. Type	Bronze shell lined white metal.
Big end bearing. Diameter.	66.0 mm. = 2.598 ins.
Big end bearing. Length (actual)	73.56 mm. = 2.893 ins.
Big end bearing. Length (effective)	65.5 mm. = 2.580 ins.
Big end bearings. Projected area	43.23 sq. cm. = 6.700 sq. ins.
Ratio. Piston area/projected area of big end bearing	4.96 : 1.
Number of big end bolts	Four.
Full diameter of bolts	14.0 mm. = 0.551 in.
Diameter at bottom of threads	12.0 mm. = 0.472 in.
Total cross sectional area, bottom of threads	4.520 sq. cm. = 0.70 sq. in.
Pitch of threads	1.5 mm.
Total load on bolts at 1400 r.p.m.	5824 lbs.
Total load on bolts at 1600 r.p.m.	7602 lbs.
Stress per sq. in. at 1400 r.p.m.	8320 lbs. sq. in.
Stress per sq. in. at 1600 r.p.m.	10,860 lbs. sq. in.
Crankshaft.	
Number and type of main bearings	Seven bronze shell lined white metal.
Cylinder centres	187.0 mm. = 7.362 ins.
Crank-pins	
Outside diameter	66.0 mm. = 2.598 ins.
Inside diameter	38.0 mm. = 1.496 in.
Length	74.0 mm. = 2.913 ins.
Journals.	
Outside diameter	66.0 mm. = 2.598 ins.
Inside diameter	36.0 mm. = 1.417 in.
Length, propeller end	67.0 mm. = 2.638 ins.
Length, rear end	67.0 mm. = 2.638 ins.
Length, centre	67.0 mm. = 2.638 ins.
Length, intermediate	67.0 mm. = 2.638 ins.
Crank Webs.	
Width	95.0 mm = 3.740 ins.
Thickness	23.0 mm. = 0.906 in.
Radius at ends of journals and crank-pins	4.5 mm. = 0.171 in.
Weight of complete shaft	99.9 lbs.
Working Clearances.	
Piston clearance, top (total)	0.75 mm. = 0.029 in.
Piston clearance, bottom (total)	0.25 mm. = 0.009 in.
Side clearance of connecting rod in piston (total)	11.8 mm. = 0.464 in.
Side clearance of big end on crank-pin (total)	0.44 mm. = 0.0173 in.
End clearance of crankshaft in main bearings	3.6 mm. = 0.118 in.
Clearance of valve stem in guide (inlet)	0.12 mm. = 0.00472 in.
Clearance of valve stem in guide (exhaust)	0.15 mm. = 0.0059 in.
Lubrication System.	
Number and type of oil pumps	Three, rotary gear.
Oil consumption per hour	11.0 pints.
Oil consumption per b.h.p. hour	0.037 pints.
Oil temperature	65° Centigrade.
Oil pressure	5.0 lbs. per sq. in.
Specific gravity of oil	0.899 s.p.g.
Ratio. Pump speed/crankshaft speed	1 : 2
Pump delivery (calculated at 100% volumetric efficiency)	91 gallons per hour at normal engine revs.
Ignition.	
Number and type of magnetos	Two Bosch.
Firing sequence of engine	1-5-3-6-2-4.
Ignition timing (fully advanced)	38° early.
Number of plugs per cylinder	Two
Type of plugs	Bosch 3 point.
Ratio. Magneto speed/engine speed	1.5 : 1.
Cooling System.	
Number and type of water pumps	One centrifugal.
Diameter of inlet pipe	54.0 mm. = 2.126 in.
Diameter of outlet pipe	50.0 mm. = 1.966 in.
Diameter of rotor	111.0 mm. = 4.36 in.
Water capacity of one cylinder	1284.0 cu. cm.
Number and type of radiators	One, semicircular honeycomb.
Ratio. Water pump speed/engine speed	2 : 1.
Water temperature, inlet	57° Centigrade.
Water temperature, outlet	68° Centigrade.
Petrol Pump.	
Number and type of petrol pumps	One Maybach, double acting.
Bore	15.0 mm. = 0.59 in.
Stroke	17 mm. = 0.66 in.
Normal delivery	264 pints per hour at 800 r.p.m.
Maximum delivery	630 pints per hour at 1,275 r.p.m.
Ratio. Pump speed/crankshaft speed	1 : 2.
Weights.	
Weight of complete engine, dry, with propeller boss and exhaust manifold	911 lbs.
Weight per b.h.p., ditto	3.10 lbs.
Weight of fuel per hour	139 lbs.
Weight of oil per hour (s.p.g. 0.899)	12.36 lbs.
Total weight of fuel and oil per hour	151.36 lbs.
Gross weight of engine in running order, less fuel and oil (cooling system at 0.65 lbs. per b.h.p.	1102.0 lbs.
Weight per b.h.p., ditto	
Gross weight of engine in running order, with fuel and oil for six hours (tankage at 10% weight of fuel and oil)	3.79 lbs.
	2100.9 lbs.
Weight per b.h.p., ditto	7.14 lbs.

GENERAL ANALYSIS OF WEIGHTS.

Description of Part.	No. per Set.	Average unit in lbs.	Weight of complete set in lbs.	Percentage of total weight.
Cylinders, bare	6	32.75	196.50	21.59
Pistons, complete with rings and gudgeon-pin set screws	6	12.30	73.80	8.11
Gudgeon-pins	6	1.75	10.50	1.15
Connecting rods and floating bushes	6	8.93	49.12	5.39
Crankshaft, complete with oil rings	1	99.90	99.90	10.98
Crankshaft extension, with nut and pin	1	4.00	4.00	0.44
Inlet valves	12	0.43	5.25	0.57
Exhaust valves	12	0.47	5.70	0.62
Inlet and exhaust valve springs	24	0.28	6.74	0.74
Inlet and exhaust valve collars, with cotters and locking device	24	0.12	3.00	0.32
Thrust, complete with ball races, propeller hub flange, and camshaft driving sprocket	1	17.68	17.68	1.94
Camshafts	2	10.00	20.00	2.20
Overhead valve rockers, complete	12	1.08	12.99	1.42
Overhead rocker bearings, complete	24	0.42	10.50	1.15
Valve tappets and guides	12	0.93	11.25	1.23
Crankcase, top half	1	94.30	94.30	10.36
Crankcase, bottom half	1	41.32	41.32	4.54
Bearing caps	6	2.68	16.12	1.77
Front bearing cap	1	5.56	5.56	0.61
Crankcase holding-down bolts, with clamps, nuts and washers	14	2.40	33.60	3.70
Induction pipe, complete	1	9.09	9.09	1.00
Propeller hub, with bolts and nuts	1	21.00	21.00	2.30
Inlet valve push rods	6	0.48	2.90	0.32
Exhaust valve push rods	6	0.49	2.97	0.33
Inlet and exhaust stiffening plates	2	2.00	4.00	0.44

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Description of Part.	No. per Set.	Average unit in lbs.	Weight of complete set in lbs.	Percentage of total weight.
Oil pumps, with drive and pipe	1	9.00	9.00	0.98
Rear cover plate	1	6.06	6.06	0.66
Front cover plate	1	4.00	4.00	0.44
Water pump, complete	1	8.50	8.50	0.93
Camshaft, oil and water pumps driving gears	1	13.65	13.65	1.50
Wireless clutch	1	5.06	5.06	0.55
Revolution counter gear	1	2.62	2.62	0.28
Machine-gun interrupter gear	1	1.82	1.82	0.20
Petrol pump	1	3.50	3.50	0.38
Magnetos	2	10.75	21.50	2.36
Magneto wiring	1	4.75	4.75	0.52
Oil pipes	1	4.00	4.00	0.44
Self-starter gear	1	6.00	6.00	0.66
Exhaust manifold	1	27.00	27.00	2.96
Carburettors	2	16.00	32.00	3.51
Miscellaneous			3.75	0.41
Total weight of engine			911.00	100.00

METALLURGICAL ANALYSIS OF PRINCIPAL PARTS.

MECHANICAL TESTS.

	Carbon. p.c.	Graphite Carbon. p.c.	Combined Carbon. p.c.	Silicon. p.c.	Manganese. p.c.	Sulphur p.c.	Phosphorus. p.c.	Nickel. p.c.	Chromium. p.c.
Cylinder head		2.57	0.91	1.60	0.70	0.131	p.34		
Cylinder barrel	0.49			0.33	1.01	0.028	0.054		
Cylinder water jacket	0.25			0.27	0.63	0.032	0.037		
Piston		2.42	0.83	1.29	0.83	0.111	0.30		
Gudgeon pin floating bush		2.39	0.65	1.43	0.76	0.146	0.47		
Gudgeon pin	0.28			0.23	0.48	0.028	0.022		
Connecting rod	0.15			0.33	0.31	0.027	0.010	1.42	0.49
Inlet valve	0.53			0.30	0.48	0.032	0.044	4.01	0.51
Exhaust valve	0.10			0.20	0.26	0.019	0.023	3.62	1.16

	Carbon. p.c.	Graphite Carbon. p.c.	Combined Carbon. p.c.	Silicon. p.c.	Manganese. p.c.	Sulphur. p.c.	Phosphorus p.c.	Nickel. p.c.	Chromium. p.c.
Crankshaft	0.31			0.31	0.63	0.030	0.015	4.01	0.83
Camshaft	0.40			0.25	0.23	0.022	0.040	3.46	0.68
Camcore	0.17			0.23	0.75	0.036	0.014	0.47	

	Lead. p.c.	Iron. p.c.	Tin. p.c.	Copper. p.c.	Zinc. p.c.	Antimony. p.c.	Silicon. p.c.	Manganese. p.c.
Big-end bearing metal	3.51		80.05	6.34		9.90		
Main journal bearing	0.92		77.65	10.00		11.18		
Crankcase		0.99		0.87	12.01	Aluminium (by Diff) 86.57	0.56	trace

MECHANICAL TESTS.

Mechanical tests were made on the crankcase and crankshaft, the results of which are given below :—

Crankcase.

Mark.	Diam.	Max. Stress.	Elongation, p.c.
T	0.253	11.65	1
L	0.254	11.28	1

Crankshaft

Position	Diam.	Mark.	Yield Stress. Tons/sq. in.	Max. Stress. Tons/sq. in.	p.c. Elong. on 4A.	R. of A. p.c.	Impact Ft. lbs.
End	1	0.254	59.0	63.1	14.3	56.3	17.21
Journal	2	0.254					
Web	3	0.254	61.6	64.1	15.1	54.6	16.121
Long.	4						
Crank-pin, long.	5	0.254	63.6	67.1	15.1	55.7	12.12
	6						
Web. trans.	7	0.254	61.4	65.3	7.2	10.5	5.5

FLAX SUPPLIES.

The following appeared in the "Times" of Aug. 24th :—

To the Editor of the "Times." Sir,—In the "Times" of Aug. 1st I read :—"Women flax pullers wanted—as owing to the wet weather instead of 1,000 acres the women teachers have been able to deal with 130 acres of the flax crop required for aeroplanes." Very few people indeed know anything about the treatment and manufacture of flax, but those who do will not be surprised. The flax problem is the discovery and perfecting of mechanical contrivances to deal with all the labour difficulties involved in the progressive stages of manufacture, which are :—Pulling, deseeding, retting, and scutching. As soon as these are perfected and available, flax production in England and Scotland can and will follow if the right people who have the experience are employed in the work and have help both financial and other from the Government.

But the question naturally arises, Why was this flax growing undertaken in England, when a much larger acreage could have been put out in the South of Ireland without any risk of this initial difficulty arising? The Fibre Corporation, a limited company, with an organisation which has successfully revived flax growing in Cork and Kerry during the past three years, was able, at the eleventh hour, to get 2,000 acres put under cultivation in the South of Ireland, and with reasonable notice could have doubled or trebled this acreage. Lord French is, it appears, strongly in favour of promoting industrial development in Ireland as a cure for Irish ills. A London Press correspondent says :—"The Americans passing through Ireland have been much impressed with the neglect of industrial development there, and their sarcastic comments have helped to bring the question to the fore. British jealousy has in the past robbed the South of Ireland of many industries." But this is no time for jealousy of the Irish either in England or in the North. One of the burning questions of the day is the flax problem, and how the demand for cloth for the aeroplanes of our Empire and its Allies is going to be met, for in this connection flax is almost as important as shells. And when the flax is pulled and dew-retted how is it going to be scutched? That is a far greater labour difficulty than pulling. It is the greatest obstacle in the way of increasing the supply of flax. For untrained workers scutching is not only very dangerous, but it is very injurious to health as at present carried on, and this work, too, has to be faced and dealt with. This is no time for anything but frankness. The Fibre Corporation have large experience in the growth of flax, and have a scutching machine which can be handled by girls and boys under sanitary conditions, which does its work thoroughly, efficiently, and economically; also a pulling machine and a deseeding machine; therefore the company is in a position to push the cultivation of flax in any part of the Empire. Why are its services not utilised?—I am yours truly, C. Stewart Cox, Reform Club, Pall Mall, S.W.

BAR IRON AND RE-ROLLED STEEL.

New List of Maximum Prices.

The Ministry of Munitions on Aug. 6th issued the following memorandum of alterations in bar iron maximum prices and extras agreed between the Ministry and the bar-iron manufacturers on Aug. 2nd :—

(1) Maximum Prices.—The maximum price for standard quality or Crown bar iron to be advanced to £14 15s. per ton net, f.o.t. makers' works.

(2) Extras for Quality.—On and after Aug. 1st the maximum extras for qualities shall be as follows, viz. :—

Best	20s. per ton.
Best, best	40s. per ton.
Best, best, best	60s. per ton.
Horseshoe iron	5s. per ton in addition to the above extras for quality.

These extras may be charged on iron so sold, and so branded, in addition to the registered brand of the firm for Crown or Standard quality.

(3) Extras for Sizes, etc.—The extras specified in the authorised list, dated Nov. 1st, 1916, may, with exception of the extras for rounds and squares over 3 in. diameter, be increased by 100 per cent.

A SAFETY VALVE.

The civilising influence of women war workers is distinctly makiug itself felt in these days in the workshops. The behaviour of men and foremen alike is improving rapidly and bad language is seldom heard. One regrets to note, however, that one result of this self-restraint on the part of the mere males seems to be a lamentable increase in the habit of playing golf on Sundays.

It appears that this game affords large opportunity for the utilisation, rather than the mere use, of objurgatory language, and that the vocabulary of the workshop is peculiarly suited to the situations which arise. It is found that a couple of rounds of a golf-links by a pair of keen but inexpert players is sufficient to exhaust the stock of expletives which would serve for a week at the ordinary rate of workshop output, and as Sunday is the only day available for our busy shop managers, the consequence is obvious.

This raises the interesting ethical point as to whether it is worse to play golf and swear on the Sabbath than it is not to play golf at all and swear throughout the week in the shops, it being granted as a hypothesis that a certain amount of swearing is necessary by way of a safety-valve, as an alternative to a cerebral seizure. Truly war and the new conditions of life which it involves are responsible for many puzzling problems.

Seaplanes and Land Machines

Contractors to
THE AIR COUNCIL.

The BLACKBURN
AEROPLANE and
MOTOR CO., LTD.,
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And at Hull.

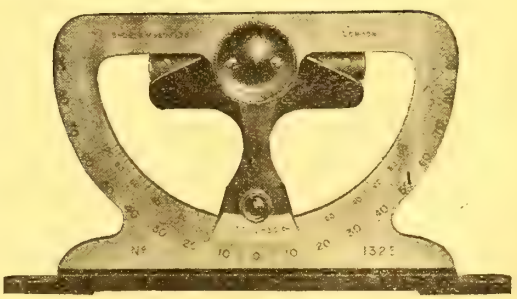
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Blackburn
AIRCRAFT

Steele's Advt. Service.



HEIGHT MEASURING
ANEROID ALTIMETERS
(Illustration is Half Actual Size.)
:: FOR EVERY TYPE OF ::
AIRCRAFT



"S. & M." INCIDENCE GAUGE
FOR MEASURING ANGLES,
— TO CLOSE LIMITS. —
(Illustration is Half Actual Size.)

Manufactured by
SHORT & MASON, Ltd.,
WALTHAMSTOW, LONDON, E.17.
Telegrams: "ANEROID, PHONE, LONDON." Telephone: WALTHAMSTOW 180.

THE PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by The Aeroplane from the current Official Patents Records.

Patent Applications.

Aeronautical Instrument Co. Aircraft. No. 13347. Aug. 16th.
Allen, A. T. Guard or shield for aeroplanes, etc. No. 13278. Aug. 15th.
Blackburn Aeroplane and Motor Co. Spars, struts, etc., for aircraft. No. 13191. Aug. 14th.
Blackburn Aeroplane & Motor Co. Spars, struts, etc., for aircraft. No. 13192. Aug. 14th.
Boulton & Paul. Mounting pulleys for control cables of aircraft. No. 13279. Aug. 15th.
Boulton & Paul. Control wheels for aircraft. No. 13280. Aug. 15th.
Boulton & Paul. Engine fairings or casings for aircraft. No. 13281. Aug. 15th.
Cleverly, E. G. Suspension of flares, etc., from kite balloons. No. 13265. Aug. 15th.
Cleverly, E. G. Detachable clips for attachment of wires to balloon or kite cables. No. 13267. Aug. 15th.
Cropper, E. Aircraft bodies or fuselages. No. 13354. Aug. 16th.
Duncan, B. A. Construction of girder-like parts of aircraft. No. 13386. Aug. 17th.
Green, F. M. Propellers for aircraft. No. 13195. Aug. 14th.
Heidelberg, P. Apparatus for training aviators. No. 13332. Aug. 16th.
Holle, A. A. Aerofoils for aeroplanes. No. 13275. Aug. 15th.
Huxley, M. F. Aerofoils. No. 13205. Aug. 14th.
James, C. A. Vessels navigable in water, air, or both. No. 13242. Aug. 15th.
Masterman, E. A. Mooring-devices for lighter-than-air aircraft. Aug. 14th.
Minvalla, P. E. J. Parachutes. No. 13348. Aug. 16th.
Pocock, H. E. Portable aeroplane hangar frame, No. 13056. Aug. 12th.
Saunders, S. E. Hollow spars for aircraft, etc. No. 13293. Aug. 15th.
Saxton, T. W. Means for indicating direction of aircraft. No. 13066. Aug 12th.
Stone, G. W. F. Method of taping or binding aeroplane spars, etc. No. 13202. Aug. 14th.
Warner, W. D. Aeroplane control devices. No. 13074. Aug. 12th.
Westaway, J. Aeronautical machines. No. 13194. Aug. 14th.
Wicks, H. Alighting device or stage for aerial machines and indicators therefor. No. 13213. Aug. 14th.
Balston, R. M. Flying-machines. No. 13830. Aug. 24th.
Blackburn Aeroplane and Motor Co. Tensioning devices for aircraft. No. 13666. Aug. 22nd.
Blackburn Aeroplane and Motor Co. Flying-boat. No. 13667. Aug. 22nd.
Crawford, F. W. Synchronising-gear for firing machine-gun through propeller of aeroplane. No. 13671. Aug. 22nd.
Crawford, F. W. Synchronising-gear for firing machine-gun through propeller of aeroplane. No. 13672. Aug. 22nd.
Falkner, F. Distinguishing marks or devices for aircraft, vehicles, tents, etc. No. 13783. Aug. 24th.
Field, B. A. Hubs for road vehicles, aeroplanes, etc. No. 13584. Aug. 21st.
George, T. A. Airships. No. 13441. Aug. 19th.
Jones, D. E. W. Apparatus for cleaning weather screens and windows of road and rail vehicles, aircraft, etc. No. 13604 Aug. 21st.
Lanchester, F. W. Height-finder for ranging guns on aircraft. No. 13765. Aug. 23rd.
Landstad, H. F. Apparatus for determining and correcting course of aircraft and for dropping bombs therefrom. No. 13498. Aug. 20th.
McQuinn, A. Device for indicating variations of aircraft from normal line of flight. No. 13624. Aug. 22nd.
Martin, M. Bullet shields for petrol tanks of aeroplanes, etc. No. 13817. Aug. 24th.
Mathys, A. W. Aeroplanes. No. 13763. Aug. 23rd.
Meek, J. W. Parachutes. No. 13652. Aug. 22nd.
Meek, J. W. Electrically heated balloons. No. 13653. Aug. 22nd.
Mower, G. A. Aircraft. No. 13535. Aug. 20th
Munro, R. C. Aerial machines. No. 13681. Aug. 22nd
Munro, R. C. Aerial machines. No. 13682. Aug. 22nd.
Shaw, W. R. D. Tails of aeroplanes. No. 13511. Aug. 20th.
Shaw, W. R. D. Aeroplanes. No. 13641. Aug. 22nd.
Stevenson, W. J. Airships, dirigibles, and aeroplanes No. 13639. Aug. 22nd.
Sutcliffe, W. Dual-control aeroplanes. No. 13460. Aug. 19th.
Valeri, R. F. S. Process for manufacture of plywood screw propellers. No. 13600. Aug. 21st.
Walters, L. W. Compound level indicator for aircraft. No. 13566. Aug. 21st.
Webb, G. W. Manufacture of tubular structures for aircraft construction, etc. No. 13762. Aug. 23rd.
Wyndham, A. J. Petrol tanks of aircraft. No. 13465. Aug. 19th.

Complete Specifications Accepted.

117,930. Aug. 1st, 1917. Abrahams, E. G., and Meek, J. W. Balloons and airships.
117,936. July 26th, 1918. Crowe, S. Aircraft and other light-weight apparatus.
117,947. Aug. 8th, 1917. Murray, J. J. Aeroplanes.
117,948. Aug. 9th, 1917. Barrett, A. W. Inclinometer for aeroplanes and other aircraft.
117,973. Aug. 21st, 1917. Galle, V. P. Automatic balancing devices for aeroplanes.
117,998. Sept. 18th, 1917. Roberts, R E. Single lever control of drive to propellers of multi-engined flying-machines.
118,028. Nov. 13th, 1917. Blackburn Aeroplane & Motor Co., and Copley, J. W. Locking devices for tension members, wires, or stays, particularly applicable to aircraft.
118,029. Nov. 13th, 1917. Blackburn Aeroplane & Motor Co., and Copley, J. W. Locking devices for tension members, wires, or stays, particularly applicable to aircraft.
118,049. Jan. 8th, 1918. Dehouek, J. Aeroplane assuring automatically the lateral and longitudinal stability.

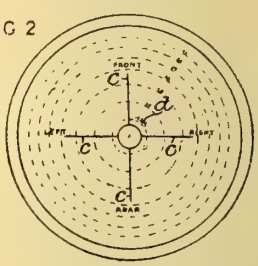
Complete Specifications Accepted.

118,123. Aug. 16th, 1917. Harris, H. S. Engines or motors.
118,140. Aug. 11th, 1917. Warren, W. T., Smiles, M. G., and W. D. Sparking control of aviation engines.
118,240. March 20th, 1918. Roe, A. V. Strainers or turnbuckles for tie-rods and the like.

Abridgments of recently published Specifications.

116166. Clinometers. Taylor, W., 21, Tweed Street, Berwick-on-Tweed.

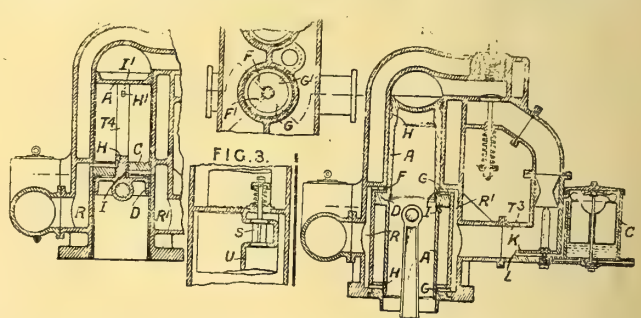
FIG 2



A clinometer for use on aircraft comprises a hollow spherical vessel of glass, or of glass and metal, containing liquid and an air bubble which serves as an indicator. The liquid may be a coloured spirit or a light oil. As shown in plan in Fig. 2, a diagram *a* indicating the zero position and the front, rear, right and left of the aircraft, and a diagram *d* showing degrees of tilt are engraved on the vessel, the diagrams being coloured so as to contrast with each other and with the liquid. The vessel may be filled through a hole at the bottom normally closed by a screw-stopper.

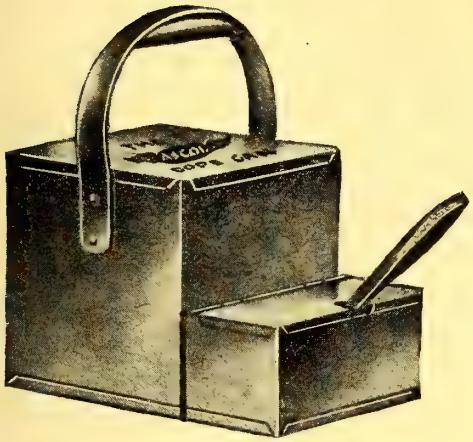
116,644. Internal-combustion Engines. Usines G. Derihon, Soc. Anon. and Derihon, E., 3, Piccadilly, London.

Pumps; spray carburettors; reservoir pressure, regulating.—Carburetted air is supplied at constant or practically constant pressure, independent of variations in altitude or speed, by a pump supplying air to a reservoir fitted with a relief valve; the pump comprises an auxiliary piston directly connected to or carried by the engine piston, and working in a cylinder in line with the engine cylinder. The air may be carburetted before or after



passing through the pump. In the form shown in Figs. 1 and 3, the piston D of a double-acting pump is formed on an extension of the engine piston A, and the pump inlets F and outlets G are controlled by recessess H, I in the piston, or by beat or rotary valves. The compressed-air reservoir R^1 is separated from the admission chamber R by a partition U provided with an adjustably- loaded double-seated relief valve S, the spring on which may be automatically controlled by an aneroid or other device. The carburettor C is placed in the conduit T^3 between the reservoir R^1 and the engine intake, and the closed float chamber communicates with the conduit T^3 by means of a passage K, the end L of which is at right angles to the conduit T^3 and in the direct current of air passing to the engine. The pump D may be single-acting. In a modification, Figs. 9 and 11, a double-acting pump is formed by the engine piston A and an auxiliary piston D; the inlet and outlet passages F, F^1, G, G^1 of the pump are provided in a partition C and controlled by recesses H, H^1, I, I^1, in the piston-rod T^4, or the inlet and outlet passages may be formed in the cylinder wall and controlled by beat or rotary valves.

ASCOL



Registered Design.

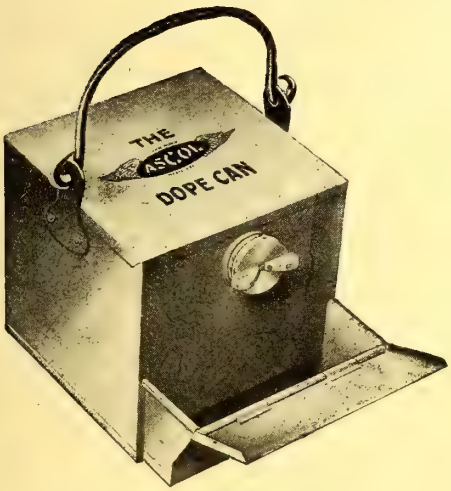
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THE IMPROVED 'ASCOL' DOPE CAN

is the original Chicken-Feed Design of Dope Can and has the following points :—

(A) Approved and recommended by the Air Board.
(B) Designed with a view to greatest economy in Dope.
(C) The easiest to fill, handle and clean.
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PRICE 102/- per doz. (Discount for quantities),
(Single Samples 8/6 each. Carriage Paid.)



Registered Design.

THE 'ASCOL' PAINT CAN

is designed for the exclusive use with Coloured Paints or Dope Wash; can be supplied painted with different coloured bands for use with red, white, or blue paints.

PRICE 94/- per doz.
(Discount for quantities).

The 'Ascol' Paint Can is the only specially designed Paint Can on the market.

A LEAFLET ON ALL THE 'ASCOL' DOPE EQUIPMENT SENT GRATIS ON WRITTEN APPLICATION.

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G. H. MANSFIELD, MANAGING DIRECTOR.

SBAC

THE AIRCRAFT TRADER

MARKET TOPICS.

Prices are for quotations on usual terms.

COPPER.—The huge demand for this metal continues and does not show any signs of diminishing, and while in some quarters there is a feeling of absolute security against shortage, producers are finding it necessary to put forward all their energies in order to satisfy the demands made upon them.

There is, of course, no immediate danger. At the same time, with continual labour and transport troubles looming ahead consumers will lose nothing by anticipating their requirements, and there is not much prospect of the price being reduced at Dec. 1st.

The official prices are unaltered.

News has just been received that the production of Copper in U.S.A. during July did not come up to expectations. An advance was granted on July 2nd, and it was expected that this would have encouraged output, but unfortunately the mine output was only 167,000,000 lbs. against 175,000,000 lbs. in June.

TIN.—There has recently been a big drop in prices, and while it is not advisable to become too optimistic, there is certainly an indication that a steadier state of affairs has been reached.

It was suggested in these columns a few weeks ago that one way of eliminating speculation in the East was to centralise the purchases for the Allies. It is understood that this is now being done, and consequently there is a marked absence of competition. The reduction in price has not stimulated buying, there being apparently an expectation that prices may decline still further.

The stocks of Tin are at present very low, but there are, apparently, fair quantities on the way, and it is stated that supplies for war work are assured.

Comparative Prices

Aug. 26th	£368	0	0	per ton.
Aug. 20th	378	0	0	per ton.
Aug. 14th	388	0	0	per ton.
Aug. 2nd	399	0	0	per ton.
Highest price, 1917	309	0	0	per ton.

LEAD.—The position here continues fairly satisfactory. Prices remain unchanged.

STEEL.—The demand for Steel continues unabated, and is, in fact, increasing. The mills are, however, keeping up the output figures and there is no apparent fear of any shortage being experienced. The demand for High Speed and Cast Steels is a long way behind the total capacity of the plants of the various makers, and in some instances plants are standing idle owing to the lack of orders.

Deliveries of Sheet Steel continue satisfactory, but producers are only just succeeding in keeping the factories supplied.

Official prices remain unchanged.

TIMBER.—Recent deliveries of Spruce have relieved the situation a little. The Controller's Committee has, apparently, not decided on their scheme for the control of Hardwoods, or, at least, no statement has yet been issued. The same remark applies to Plywood.

There appear to be ample supplies of English Ash; the chief difficulty is in obtaining well-seasoned wood.

Official prices remain unchanged.

FABRIC.—Supplies are fairly satisfactory and the period of anxiety seems to be terminating. The flax crop is very promising indeed, and the supplies of flax should be quite sufficient to meet the demands for national requirements.

SILVER.—On Aug. 20th Silver was advanced to 49½d.

BRUSHES.—Electric lamps. There is likely to be an acute shortage of the above during the next few months, and firms would be well advised to look well ahead and see that their requirements are covered.

CAST IRON SCRAP ORDER.

The Minister of Munitions has issued an Order, dated Aug. 20th, controlling Cast Iron Scrap and making an addition to the General Permit dated Nov. 1st, 1916, fixing maximum prices for various grades of that material. Certain additions to and modifications of the General Permit dated Nov. 1st, 1916, and subsequent modifications thereof dated March 22nd, 1917, and Jan. 4th, 1918, relating to second-hand rails and wrought iron scrap are also made. All communications in reference to the Order and modification of Permit should be addressed to:—The Controller of Iron and Steel Production, Room 101, Ministry of Munitions, 8, Northumberland Avenue, W.C.2.

LEATHER AND CANVAS EQUIPMENT FOR AIRCRAFT.

Aircraft constructors who find difficulty in obtaining leather and canvas equipment for aeroplanes, such as is found in safety belts and similar appliances, are invited to apply to C. H. Holmes and Son, Albert Street, Manchester.

The activities of this firm have increased so much that it has been found necessary to acquire a new factory and an additional staff of skilled workers. The factory is fitted with modern labour-saving machinery suitable for rapid output, and inquiries are solicited from firms engaged on war work, whose communications will receive immediate attention.

CONTROL OF IMPORTED SOFTWOOD TIMBER.

The following announcement is made, dated Aug. 27th:—

It has been represented to the Controller of Timber Supplies that merchants to whom rations from the national stock have been allocated are in some cases refusing to accept orders from consumers, with a view to distributing their allotment among their various customers or otherwise holding it back from purchase by persons holding permits. This course is strongly to be deprecated.

The Controller wishes to point out that merchants are now acting in effect as distributors of the national stock, and that failure to supply holders of permits where unsold rations are available can only result in injury to the national interests, as well as to those of the timber trade. Refusal to sell to a permit holder on the part of a merchant able to supply would afford ground for the withdrawal of the merchant's ration.

In the event of undue delay by the trade in the supply of timber to a customer holding a permit, the Controller might find it necessary to supply direct from the national stock.

A WORKS OUTING.

The London Aircraft Company held their first annual works outing on Saturday, Aug. 17th. Launches left Richmond for Chertsey at 10 a.m., and returned at 7.30 p.m., after an enjoyable day. Concerts were held on each launch, and the artists, who were from the factory, deserve the heartiest congratulations. Orchestras, composed of feminine performers, played the latest selections. Thanks are due to the Committee for the able manner in which they carried out the arrangements, and also to the firm for their financial support.

A. G. S. PARTS.

Mr. G. H. Mansfield, of the Aircraft Supplies Co., Ltd., Ascol House, 125, Long Acre, W.C.2, announces that he has a large number of special A.G.S. parts, including nuts, pins and shackles, and also wire, tape, webbing and packing felt, which conform to various official specifications. The prices in many instances are exceptional, and delivery in most cases can be made from stock. Inquiries are accordingly solicited.

Attention is once more drawn to the fortnightly House Organ of the Company, called "Aircraft Supplies," which includes an up-to-date list of A.G.S. parts passed by the A.I.D. which can be supplied immediately, and firms not receiving "Aircraft Supplies" are recommended to send a nominal subscription of ten shillings per annum, which will keep them thoroughly in touch with A.G.S. parts on offer.

ON FORDING.

One would imagine that the verdict of a standard dictionary concerning the meaning of the expression Fording would be the act of crossing a ford. But the term has a deeper and wider interpretation, namely the use of the Ford car upon the face of the earth. Presumably with the advent of Ford aeroplanes and submarines the expression will be applicable to navigation "in the heavens above, in the earth beneath, and in the water under the earth."

To forward the claims of Fording "on road and land," Mr. Charles D. Clayton, the well-known publicity expert, of 52, Shaftesbury Avenue, London, W.1., has founded a journal entitled "Fording," which treats mainly of the Ford automobile and of the Ford agricultural tractor. The price of this publication is threepence, or four shillings for twelve issues post free, but presumably as an insurance against war difficulties there is no definite statement as to the period between each issue.



The new A. J. Car will glide into its usual place—the front.

ELOQUENT FACTS.

It is four years since we made a Car. Yet note the great number of A. J. Cars on the road to-day. Many of them are the 1910 model. Getting eight years' service out of an engine is all right, isn't it?

The four years' experience of making Aero Engines will be reflected in the Post War A. J. Car. *There is a Waiting List.*

"Hail to the Chief!"—
The Post-War A. J. Car.

Arrol-Johnston Ltd.
DUMFRIES.

GWYNNES
LIMITED.

CONTRACTORS TO H.M. GOVERNMENT.

MANUFACTURERS AND SOLE LICENSEES IN THE BRITISH EMPIRE

"CLERGET" PATENT AERO ENGINES.

ENGINEERS, LONDON.

"GWYNNE, LONDON."

COMMERCIAL AERONAUTICS

AERIAL VEHICLES.

A General Survey.

When one talks of Commercial Aeronautics one has in mind not merely the carriage of goods and the conduct of services in the direct interest of the Commercial community generally, but also any use of aeroplanes designed to bring a profit to their owners as distinct from their manufacturers.

Though the aeroplane and the motor vehicle will seldom compete directly, and their uses will differ essentially, the two methods of transport will be subject to very similar sub-divisions. In the field of the motor vehicle run for trade or profit we have :—

(1) The fast delivery van for light goods, the mail van, and express services generally.
(2) The comparatively heavy and slow goods-carrying vehicle, in which speed capabilities are only desirable so long as they are consistent with, or tend towards, economy.
(3) The motor 'bus, plying on regular routes and carrying passengers at low fares.
(4) The motor cab, operating anywhere within a certain radius, at much higher fares than the motor 'bus, and with a much lower carrying capacity but at a higher speed.
(5) The motor coach used primarily for pleasure trips by fairly large parties.
(6) The jobmaster's car available for "hack" or pleasure use by small parties at a higher cost per passenger, and not necessarily at a fixed rate per mile.

We shall probably not go far wrong if we anticipate that commercial aircraft will similarly sub-divide itself into :—

(1) The mail and light parcel carrier, travelling at considerable speed.
(2) The comparatively slow goods-carrying aeroplane, used primarily where no other sound means of conveyance exists; and, therefore, organised to work at the lowest possible cost and at a strictly moderate speed.
(3) The aero-'bus, working regular services between fixed points, and aiming at only fairly high speed and good carrying capacity, coupled with moderate fares.
(4) The aero-taxi of higher speed and small carrying capacity, working at a fixed charge per mile for any given number of passengers within low limits.
(5) The aero-coach, travelling at only moderate speed and conveying parties on holiday and pleasure trips.
(6) The hire-aeroplane, let out by the day, week, or month to small parties on terms mutually agreed but not fixed at any recognised standard

(1).—The Light Delivery Van.

In the first instance, this class of aerial vehicle will, undoubtedly, be best represented by the mail and light parcel van. The aerial mail service will fill a particular niche of its own. It will occupy a position intermediate between the ordinary postal service of to-day on the one hand, and the telegraph and telephone services on the other. It will generally lie between the two as regards speed.

In the matter of cost, if applied with any discretion, it will not be more expensive than the telegraph or the telephone. Its main advantage over these two latter will lie in its ability to convey a written contract or a binding offer. For such purposes the telegraph and the telephone are of little service.

A man can say what he likes over the 'phone without being legally bound by his utterances. Similarly, he can disown a telegram which does not bear his signature.

There are occasions on which the aerial mail, used at least for part of a long journey, will be found more rapid than the telegraph.

Take, for instance, another occasion on which some event of world-wide importance occurs, perhaps at a place of no great size. The representatives of the press of the world are all wanting the use of the wire at the same moment. The delay is considerable; the length of the message that can be sent is limited. The aerial mail service could convey such a message to some other point whence, if necessary, it could be forwarded by a line not subjected to the same temporary congestion. Alternatively, it could be carried by aeroplane the whole way.

In the matter of private communications, the telegram is open to inspection, and, therefore, to criticism. The telephone is uncertain, inasmuch as, over long distances, great delays are frequent, the line is liable to be bad, and the person with whom one wants to speak may be inaccessible for the limited period during which the line remains at our service. By the time he is found, our four minutes, or whatever it may be, is over, and another delay of two or three hours must very likely be faced before getting through again.

If a private message can be couched in very few words, a telegram will probably be generally cheaper than the aerial post. If, on the other hand, the subject is one which needs fairly full explanation, the aerial post will probably be appreciably cheaper, and, under at all favourable conditions, will be very nearly as quick.

The aerial parcel-van will doubtless be used for the rapid carriage of urgent or perishable small consignments, the prompt arrival of which might, in plenty of cases, be of great convenience to the individual, or of great assistance in concluding a big piece of business. There will, no doubt, be some occasions upon which the delivery of goods purchased will be entrusted to the aerial parcel-van on account of its high speed.

Then, again, people travelling away from home and discovering that something of importance had been left behind would be able to get it by air with the least possible delay.

In civilised countries the light delivery air-van will have to travel at very high speed, because, otherwise, it will merely come into direct competition with the railway or the motor-van. In undeveloped countries the mail and light delivery service can be worked at the lowest speed consistent with safe flying, and, even then, will be quite fast enough.

The question of speed depends entirely upon the competitive forms of transport existent at each point. Where there is no railway, the aerial services will be required to carry mails and parcels not specially urgent, but merely requiring moderately prompt delivery at a strictly moderate cost.

In the journalistic world the aerial mail will, undoubtedly, be largely used, because it will suffice for the transmission of reasoned opinions and original matter, as well as for the pith of the news.

Altogether, then, the light delivery air-van represents a type of vehicle which is likely to be found in one form or other in all parts of the globe.

(To be continued.)

THE AMERICAN AERIAL MAIL.

The postage on mail carried by aeroplane has now been reduced by the Government to 8d. for the first ounce and 3d. for each additional ounce, of which 5d is for special delivery service. The mail consists of first-class matter, including sealed parcels not exceeding 30 ins. in length and girth combined.

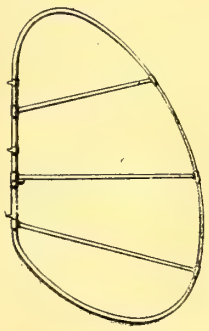
A daily air mail service between New York and Chicago, cutting the present railway time in halves and bringing the Pacific Coast twelve hours nearer the Atlantic, is planned by the Post Office Department, following the successful New York—Washington—Philadelphia service.

THE MOROCCO AERIAL MAIL.

A Reuter's message from Paris, dated Aug. 22nd, says :—

Since the Le Bourget-St. Nazaire trials the air post has become one of the leading questions of the day. The newspapers here deal at length with the working of the new service and its eventual developments. They also examine the question of what is being done abroad in this direction. They point out in this connection that an aerial postal service has existed for a year already at Morocco, where it is officially established, and, indeed, is regarded as quite normal. Each sub-division has a squadron at its disposal, the aviators ensuring a service between the chief town of the sub-division and distant outposts. They carry the ordinary mails, urgent dispatches, and telegrams impossible to send by wire. Finally, they see that certain posts are kept in funds. All these activities are carried out automatically, without interfering with the normal service of the bombing, photographic, and patrol squadrons. It is suggested that in future it might be possible, by means of an agreement between the Morocco Protectorate and the Government of Algeria, to establish aerial postal communication with the great North African colony, which would benefit no less than Morocco by the economy in time and expense thus assured.

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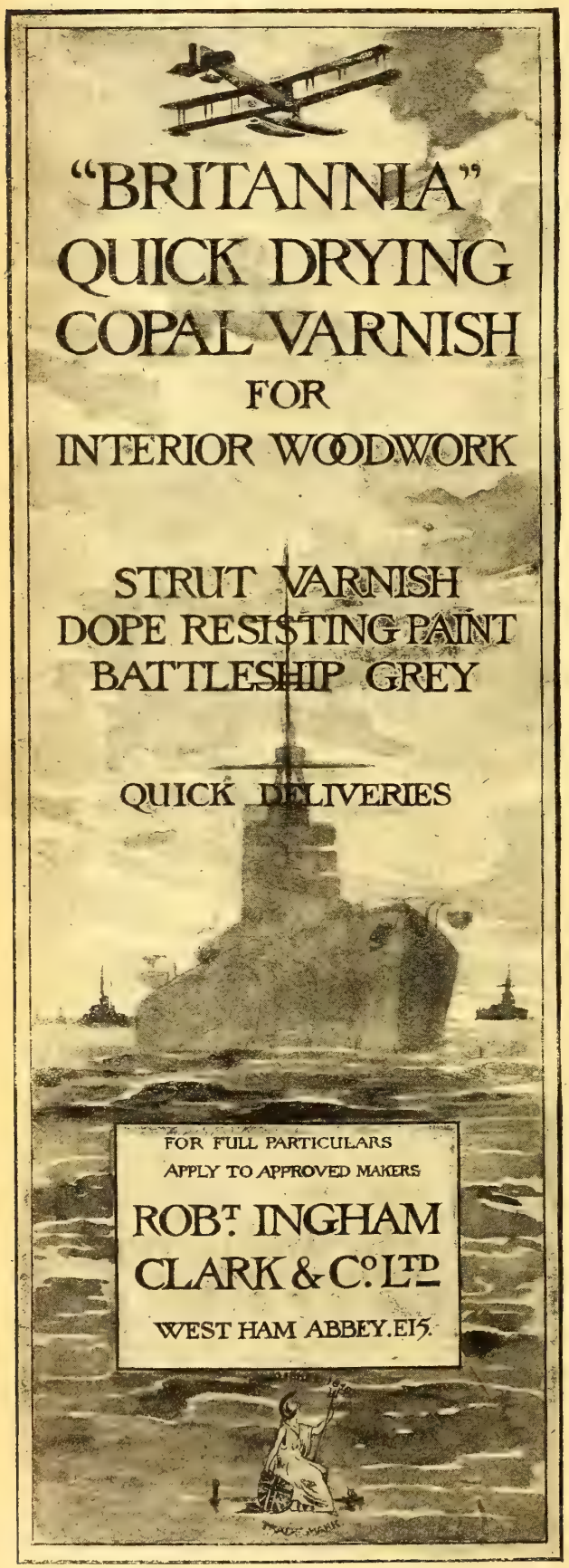
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AIR-WISDOM.

BEFORE a man sports a squadron-commander's streamers there are few tricks of the air that he isn't up to.

He's just chock-full of weird and wonderful air-wisdom; particularly air-*kit* wisdom, which he ranks highest in importance. For the enquirer's benefit he usually condenses that particular portion of his lore into three words—which he shoots at you and then turns to other things with a that's settled air—"Go to Dunhills."

Go to the people, that is (if he had time to elaborate), who know exactly what your needs are; whose name was a household word amongst motorists years ago when this highly specialised kind of clothing first became a serious necessity; whose unrivalled knowledge of materials and fastenings is at your service, who alone can give you the distinctive Dunhill cut; and who fix their prices with a benevolent eye for your pocket.



Call in, if you can, at our well-known "Base" in Conduit Street—a few paces from Regent Street—to inspect the full kit. Or, if London is "out of bounds" drop a line for patterns and full details which will be sent gladly on request.

Dunhills

LIMITED.

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Regent Street, London, W. 1.

AIRCRAFT FINANCE

CURRENT TOPICS.

Values Rising Steadily.

Concurrent with the military progress in France, the confidence of the Stock Markets increases, and finds expression in rising prices. The investor who seeks cheap high-class gilt-edged securities experiences no little difficulty in covering his requirements, unless he is willing to tempt the seller with a good price. Holders of such investments paid considerably more than current prices, and do not feel inclined to sacrifice the loss in capital value. It is an interesting situation: how long it will continue so is conjectural; but, no doubt, the military position is the determining factor, though, in the long run, intrinsic merit, coupled with the general economic state of the country, must prevail.

A "Puff" for Whiteheads.

One is at a loss to understand the meaning of an obvious puff sent to the press by the Whitehead Aircraft Co. Briefly, it is to the effect that the Board of Referees has increased the statutory percentage for aircraft construction companies from 6 per cent. to 15 per cent. upon invested capital before any charge is made in respect of Excess War Profit Duty. Under the Finance Act, it is continued, an addition of 3 per cent. is automatically added to this 15 per cent. in respect of the accounting periods ending after Dec. 31st, 1916, so that the practical effect of this decision is that Aircraft companies retain an equivalent amount of 18 per cent. before being liable for payment of this Excess Profit Duty.

Let Us Hope So.

Quite recently, it has been pointed out herein, there has not been a market in the shares of the Whitehead Company, so that those people who subscribed to them on the invitation of the prospectus issued earlier in the year have been placed at a disadvantage. One wonders whether the present "puff" is merely the preliminary to a market being created in these particular shares. Let us hope so.

A Few Isolated Transactions.

It seems almost unnecessary to recapitulate the awkward position of a shareholder who possesses a security in which there is no real market. Admittedly, there have been a few isolated transactions in Whiteheads since their virtual unmarketability was commented on in this column. But a few isolated bargains do not constitute a market in the Stock Exchange sense. There ought to be freer dealings, and then the shares would gravitate to their proper price-level, and the holder of them would know how he stood. It is to be hoped that this will happen.

New Capital for Magnetos.

The Fellows Magneto Co. is now issuing some additional capital with the consent of the Treasury. This amounts to £40,000 in 8 per cent. cumulative participating preferred shares in £1 shares, which are offered to shareholders at par. The existing preferred shares received a dividend of 9½ per cent. in all out of the operations of the period covered by the last report, a period which commenced with the inauguration of the concern.

Government Has Been Helpful.

At the instigation of the Government the company has been doing a lot of work and has been receiving favourable treatment. In these circumstances it should be able to consolidate its position for post-war business and help to retain the magneto industry from the domination of Germany. Quite recently there have been some dealings in the existing preferred shares at 20s., so that there is not much "turn" in connection with the new issue. The ordinary shares which received a 15 per cent. dividend are selling at 18s.

COMPANY ANNOUNCEMENTS.

The files of the following new companies are available for inspection at Somerset House.

NEW COMPANIES.

Economic Aircrafts, Ltd.—Private company Registered Aug. 20th. Capital, £2,000 in £1 shares. To design, manufacture, buy, sell, let on hire and deal in aeroplanes, balloons, airships, etc. The subscribers (each with one share) are:—W. R. D. Shaw, Danesbury House, Chingford Road, Walthamstow, E.17; G. H. Glover, 32, Charing Cross, S.W.1, incorporated secretary. The first directors are to be appointed by the subscribers. Registered office: 32, Charing Cross, S.W.1.

Aircraft Consolidated, Ltd.—Private company. Registered August 22nd. Capital £100 in £1 shares. Manufacturers of and dealers in aircraft and components, electrical appliances and material, motor, electrical and general engineers, etc. The subscribers (each with one share) are:—C. Nathan, 8, Clanricarde Gardens, W.2, secretary; A. M. Haughton, 7, Loris Road, W.6, clerk. The first directors are to be appointed by the subscribers. Registered office: 97, New Bond Street, W.1.

Morley Aviation Co., Ltd.—Private company. Registered Aug. 23rd. Capital £1,000 in £1 shares. Aeroplane, aircraft, aircraft part and piano manufacturers, cabinet makers, joiners, carpenters, timber fellers, hangar and shed constructors, wood workers, etc.

The subscribers (each with one share) are:—A. Staples, Hylda House, Gascoyne Road, South Hackney, E., gentleman; E. J. Dunn, 8, Victoria Street, Hackney, E.9, aircraft assembler. The first directors are:—E. J. Dunn, S. F. Dunn, Jessie A. Forecast, Elizabeth A. Mundy, and A. Staples. Registered office: 1, Renfrew Road, S.E.11.

Ikaros Aircraft and Manufacturing Co., Ltd.—Private company. Registered Aug. 26th. Capital £5,000 in £1 shares. Manufacturers of and dealers in devices, appliances and machinery for aerial and water navigation or progression; also motor car and cycle manufacturers, etc. The subscribers (each with one share) are:—A. C. Moschonas, 52, Compayne Gardens, N.W.16, manufacturer; D. Anghelato, 4, Hyde Park Gate, S.W., shipowner. The first directors are:—A. C. Moschonas and D. Anghelato (both Greek). Registered office: Effingham House, Arundel Street, W.C.2.

Ford's Garage and Cycle Co., Ltd.—Private company. Registered Aug. 27th. Capital £20,000 in £1 shares. To take over the business carried on at Alnwick and Berwick-on-Tweed as "Ford's Garage and Cycle Co."; also to carry on the business of aeroplane and aero engine manufacturers, etc. The subscribers (each with one share) are:—F. Hardy, Newton Link House, Lesbury, Northumberland, farmer; C. B. Ford, 34, Bondgate Street, Alnwick, motor engineer; A. D. F. Patten, 47, Bondgate, Alnwick, chemist. The first directors are:—C. B. Ford, F. Hardy, and A. D. F. Patten. Registered office:—Alnwick, Northumberland.

Cremer Aircraft and Industrial Works, Ltd.—Private company. Registered Aug. 27th. Capital £10,250 in 10,000 "A" shares of £1 each and 5,000 "B" shares of 1s. each. To take over the business carried on by A. J. Cremer at Lorn Road, Brixton, S.W., and to carry on the business of aircraft manufacturers, engineers, electricians, engine, dynamo, and motor manufacturers, etc. The subscribers (each with one share) are:—A. J. Stryckmans, 21, Coleman Street, E.C.2, Member of Brussels Stock Exchange; A. de Barsy, 20, Fortismere Avenue, Muswell Hill, N.10, engineer. Directors: L. Hiard, A. de Barsy, A. J. Stryckmans, and A. J. Cremer (all of Belgian nationality). Registered office: Lorn Road, Brixton, S.W.

Whitfield Aviation, Ltd.—Registered Aug. 29th. Capital, £60,000 in £1 shares. Manufacturers of and dealers in aircraft, electric or mechanical apparatus and fittings, aircraft accessories, etc. The subscribers (each with one share) are:—H. Whitfield, 7, Bedford Road, W 4, company director; N. Tweddle, 68, Abinger Road, Chiswick, W.4, works manager; H. S. Reeson, Lansdowne Lodge, Dartmouth Road, S.E.23, engineer; J. R. Lund, 23, Arthur Road, Holloway, N., cashier; J. A. Tillcock, 86, Ferndale Road, S.E.25, storekeeper; E. J. T. Tintoul, 24, Clarendon Terrace, W.9, clerk; H. Pumphrey, jun., 14, Paternoster Row, E.C., solicitor. The first directors are: H. Whitfield (managing director), S. L. Whitfield and N. Tweddle. Registered office: 14, Paternoster Row, E.C.

MORTGAGES, CHARGES AND SATISFACTIONS.

Patey and Co., Ltd.—Memorandum of satisfaction in full on March 13th, 1918, of charge dated Nov. 26th, 1917, securing undefined amount. (Notice filed Aug. 23rd, 1918).

Mortlake Aircraft Co., Ltd.—Particulars of £2,500 debentures created Aug. 12th, 1918, filed pursuant to Section 93 (3) of the Companies (Consolidation) Act, 1908, the whole amount being now issued. Property charged: The company's undertaking and property, present and future, including uncalled capital. No trustees.

(Continued from page 823.)

Cox, F. B. Woods, May 15th; W. R. Munro, June 1st; F. Atkins, June 14th; (Hon. Lt.) J. B. Bown, (Hon. Capt.) U. Brown, and retains his hon. rank, C. Hammersley, C. G. Whitmore, July 1st; (Hon. Lt.) D. G. Bown, Aug. 4th; J. Darwin, F. P. Williams, Aug. 18th.

D. Simmons is granted a temp. commn. as Sec. Lt., Aug. 26th.

Lt. R. H. Whittington resigns his commn., Aug. 28th.

The initials of Lt. (Hon. Capt.) F. B. Bedford are as now described, and not as in "Gazette," July 2nd.

Medical Branch.—P. T. J. O'Farrell is granted a temp. commn. as Capt., Aug. 26th.

The following are granted temp. commns as Lts.:—J. G. Bird, Aug. 23rd; J. Ferguson, Aug. 26th.

The date of appt. of N. Homewood as temp. Lt. is Aug. 12th, and not as stated in "Gazette," Aug. 16th.

Dental Branch.—S. C. Turner is granted a temp. commn. as Lt., Aug. 26th

Memoranda.—Capt. H. A. Porter relinquishes his appt. as S.O., April 15th.

Lt. (Hon Capt.) D. C. Woods to take rank and prec. as if his appt. as Lt. bore date Jan. 1st.

Admiralty, Aug. 28th.

The following extracts are taken from a dispatch received from Vice-Admiral Sir Roger J. B. Keyes, K.C.B., C.M.G., C.V.O., D.S.O., Commanding the Dover Patrol, concerning the operation against Ostend on the night of May 9th-10th:—

Aerial photographs taken prior to the operation clearly showed that the enemy had made special preparations in anticipation of a renewed attack.

The following man volunteered for dangerous rescue work:—

Air Mech., 1st Cl., Douglas Gordon Smith, R.N.A.S., O.N. F.12853.

The following men also rendered valuable services in action and off the enemy coast:—

In Motor Launches.

Air Mech., 1st Cl., Laurence Henry Sensicle, R.N.A.S., O.N. F13014 (M.L. 105).

Ldg. Mech. William Henry Grice, R.N.A.S., O.N. F12790 (M.L. 283).

The co-operation of the Air Force under Brig.-Gen. Charles L. Lambe, C.M.G., D.S.O., R.A.F., was of great value during the operation. In spite of the fog, the squadron under the command of Sqdn. Comdr. Herbert G. Brackley, D.S.O., D.S.C., continued to attack in accordance with programme until after the completion of the operation.

* * *

The King has been graciously pleased to approve of the award of a medal to the undermentioned man, in recognition of the distinguished services mentioned in the foregoing dispatch:—

To Receive the Distinguished Service Medal.

Air Mech., 1st Cl., Douglas Gordon Smith, R.N.A.S., O.N. F12853.

* * *

The following decorations have been conferred by the Allied Powers on officers and men of the British Naval Forces for distinguished services rendered during the war:—

His Majesty the King has given unrestricted permission to the officers and men concerned to wear the decorations in question.

Decorations Conferred by the President of the French Republic.

The Legion of Honour.

Officer.

Rear-Admiral George C. Cayley, C.B. (temp. Maj.-Gen., R.A.F.)

The Medaille Militaire.

Air Mech., 1st Gr., Robert G. Kimberley, D.S.M., R.N.A.S., O.N. F4766.

P.O. Mech. Geoffrey C. P. Rumming, C.G.M., R.N.A.S., O.N. F813.

P.O. Mech. John H. Russell, C.G.M., R.N.A.S., O.N. F839.

War Office, Aug. 29th.

His Majesty the King has been graciously pleased to approve of the award of the Meritorious Service Medal to the undermentioned Non-Commissioned Officer for gallantry in the performance of Military duty:—

12142 Flt. Sergt. E. J. O'Shea, R.A.F. (Barwood).

Air Ministry, Aug. 30th.

R.A.F.—The following temp. appts. are made at the Air Ministry:—

Deputy Chief of the Air Staff.—Col. (temp. Brig.-Gen.) O. Swann, and to retain the temp. rank of Brig.-Gen. while so empld., vice Lt.-Col. (temp. Brig.-Gen.) R. M. Groves, D.S.O., Aug. 12th.

Staff Officer, 2nd Cl.—Air.—G. J. Watney (actg. Staff Paym., R.N.), and is granted a temp. commn. as Maj., July 15th.

Staff Officer, 3rd Cl.—A. J. Dawson (temp. Capt. in Army), and is granted a temp. commn. as Capt., April 22nd.

The following temp. appts. are made:—Staff Officer, 1st Cl.—Maj. R. B. B. Colmore, and to be temp. Lt.-Col. while so empld., May 14th.

Staff Officer, 3rd Cl.—P.—Lt. G. E. Moore, and to be temp. Capt. while so empld., April 1st.

The name of Capt. C. C. Treatt is as now described, and not as in "Gazette," May 10th.

Flying Branch.—Capt. (temp. Maj.) W. G. Sitwell to be temp. Lt.-Col. while empld. as Lt.-Col. (A. and S.), Aug. 8th.

To be temp. Lt.-Cols. while empld. as Lt.-Cols. (S.):—Maj. E. R. C. Nanson, D.S.C., Capt. (temp. Maj.) E. V. S. Wilberforce, Aug. 8th.

To be temp. Majs. while empld as Majs (A.):—Lt. (temp. Capt.) W. A. Hannay, May 31st; Capt. C. M. Leman, M.C., Aug. 14th; Lt. (temp. Capt.) T. Q. Back, Aug. 15th.

Lts. (temp. Capts.) to be temp. Majs. while empld as Majs. (A. and S.):—A. N. Gallehawk, F. J. Linnell, Aug. 1st.

Capt. A. T. Moore to be temp. Maj. while empld. as Maj. (K.B.), May 27th.

Capt. C. Maclaurin, D.S.C., to be temp. Maj. while empld. as Maj. (S.), Aug. 19th.

Lts. to be temp. Capts. whilst empld. as Capts. (A.):—P. T. Carden, M.C., May 27th; A. D. Broughton, June 1st; M. L. Cooper, July 3rd; O. M. Baldwin, July 22nd; (Hon. Capt.) T. P. M. Alexander, E. E. Macartney, Aug. 1st; (Hon. Capt.) H. S. Holman, (Hon. Capt.) C. B. Sproatt, Aug. 8th; S. C. Joseph, Aug. 10th; H. Hillier, Aug. 11th; K. C. Tilman, Aug. 12th; T. C. Luke, M.C., Aug. 13th; N. R. Smuts, Aug. 14th; L. G. Banks, Aug. 15th; W. G. Gairdner, Aug. 17th; C. P. Brown, E. C. Hey, H. C. Senior, W. E. Shields, Aug. 19th; J. E. Croden, W. D. Knibbs, G. O. Newton, Aug. 23rd; G. E. Race, Aug. 24th.

Lt. (Hon. Capt.) C. Boumphrey to be temp. Capt. whilst empld. as Capt. (A. and S.), Aug. 1st.

Lts. (Hon. Capts.) to be temp. Capts. whilst empld. as Capts. (K.B.):—E. E. Barnett, K. B. S. Greig, F. B. Towers, April 24th; D. B. M. Hume, April 25th; J. R. Blunt, May 7th; O. M. Ayrton, O. S. Stiles, May 27th.

Lt. F. Tymms, M.C., to be temp. Capt. whilst empld. as Capt. (O.), May 31st.

Lts. (Hon. Capts.) to be temp. Capts. whilst empld. as Capts. (S.):—B. A. Smart, D.S.O., Aug. 1st; A. T. Barker, C. W. Bailey, R. D. Delamere, M. Faux, G. D. Kirkpatrick, H. Rampling, Aug. 8th.

Lts. to be temp. Capts. whilst empld. as Capts. (S.):—T. H. Boyd, H. L. Macro, Aug. 1st.

Capt. D. C. Ware reverts to Lt. (A.) at his own request, Aug. 7th.

Lt. (temp. Capt.) I. H. P. McEwen relinquishes his temp. rank on ceasing to be specially empld., Aug. 12th.

Capt. F. A. M. Rawes to be Lt. (Dir.) from (Ad.), and to be Hon. Capt., Aug. 1st.

Lt. F. W. Thomas to be Lt. (O.) from (T.), and to retain his original seny., July 15th.

Sec. Lt. F. W. Elliott (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt. (A. and S.), July 19th.

K. B. Wilkinson (Prob. Flt. Officer, late R.N.A.S.) is granted a temp. commn. as Sec. Lt. (A. and S.), May 6th.

The following are granted temp. commns. as Sec Lts. (A. and S.):—J. E. S. Jones (Lt., Northn. R., T.F.), and to be Hon. Lt., May 19th; J. E. Lowdon, June 29th; A. A. B. Chipper, July 2nd; H. D. McGrath (Lt., Brit. Columbia R., C.E.F.), and to be Hon. Lt., July 19th; H. W. Bush, Aug. 11th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A. and S.):—V. W. Lindars, June 16th; G. B. Harper, A. E. Loveday, June 17th; L. J. Betts, June 18th; W. G. S. Searight, J. A. Arnott, G. V. Yorke, G. G. H. du Boulay, June 19th; R. J. Winbolt, E. H. Dodds, T. C. Ormrod, S. L. McKillen, June 20th; W. Druce, S. J. Appleby, June 21st; J. S. Renton, W. E. Everett, June 22nd; F. W. Skelton, W. Cooper, G. R. Allport, A. B. Crawford, June 24th; H. Murray, A. H. Sowter, June 26th; G. B. H. Baker, H. F. Carpenter, R. V. O'Connor, J. Edmunds, June 27th; E. T. Brant, A. R. L. Lango, S. C. S. Manning, A. A. McHardy, J. F. Greenwood, A. W. Amies, H. K. Wilson, H. W. Wallace, A. S. Woodthorpe, F. W. Hart, June 28th; A. R. Loveridge, V. F. Rogers, J. Burr, G. S. Eby, L. J. Cuzner, C. S. Fowler, June 29th; W. H. Hutt, H. T. Ebbutt, June 30th; E. B. Thomson, July 7th; C. H. Roy, July 9th; T. G. Simpson, July 12th; W. R. Moscrip, July 26th; R. Barker, H. E. Wase, July 27th; S. H. Wheatley, July 28th; G. W. MacLeish, July 30th; L. W. Marchant, W. H. Scribbins, C. R. McInnes, T. F. Naylor, July 31st; O. L. Canton, J. O. R. S. Saunders, J. H. Parkinson, Aug. 6th; W. O. G. Fenton, Aug. 10th; C. E. W. Thresher, N. Floyd, Aug. 12th; T. A. Jackson, P. B. Townsend, Aug. 13th; R. E. La F. Wyatt, L. Reader, Aug. 14th; I. M. Mairis, Aug. 15th; E. A. Smith, J. E. Way, C. A. Beattie, T. V. Callard, F. G. Tomlie, Aug. 16th; F. Smith, C. Johnson, Aug. 17th; G. M. J. Morton, Aug. 15th; J. E. Harrison, Aug. 18th.

F. Jones (temp. Sec. Lt., Bord. R.) is granted a temp. commn. as Sec. Lt. (K.B.), Aug. 7th.

The following are granted temp. commns. as Sec. Lts. (Obsr. Officers):—F. D. Genlloud (temp. Sec. Lt., S. Wales Bord.), P. C. Samuel (Lt., attd. R. War. R.), and to be Hon. Lt., P. Bolland (Sec. Lt., Lpool. R., T.F.), Aug. 29th

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers):—G. T. Carr, May 25th, W. G. West, A. R. Green, H. C. Shearman, E. Priest, S. C. Hewitt, G. S. Coggan, June 22nd; L. T. Harris, A. A. Cowan, H. Gerhardi, J. M. James, C. E. Standish, C. J. Baldock, July 2nd; W. W. Pritchard, C. E. Mason, D. E. Dann, S. Dennis, R. Clarkson, E. W. Hargreaves, Aug. 29th.

The following Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Lt.:—C. W. Rivers, H. G. H. Stewart, Aug. 31st.

Lt. H. Seymour relinquishes his commn. on ceasing to be empld., Aug. 21st.

The date of appt. of Flt. Cadet J. M. Scott as Sec. Lt. (Obsr. Officer) is Aug. 25th, and not as stated in "Gazette," July 23rd.

The date of appt. of Flt. Cadet S. G. Burton (since killed) as Sec. Lt. (Obsr. Officer) is July 18th, and not as stated in "Gazette," July 30th.

The date of the relinquishment of commn. by Sec. Lt. C. R. Hyley is Aug. 31st, and not as stated in "Gazette," July 30th.

The surnames of the following Flt. Cadets are as now described and not as in "Gazette," Aug. 13th:—R. M. Fulton, T. J. Calnan.

The Christian name of Alfred Camp is as now described, and not as in "Gazette," Aug. 13th.

The Christian names of the following Flt. Cadets are as now described, and not as in "Gazette" stated against their names:—William Trudgian Richards, Aug 6th; Philip Carrington Seale McCrea, July 30th.

The surnames of the following Flt. Cadets are as now described, and not as in "Gazette" stated against their names:—E. R. Pett, Aug. 6th; A. Whichelow, July 17th.

The name of Richard Henry Foxlee (now Sec. Lt., Dir.) is as now described, and not as in "Gazette," June 14th.

The surname of Flt. Cadet Herbert Thomas Barnett is as now described, and not as in "Gazette," Aug. 20th.

The notification in "Gazette," Aug. 9th, concerning Sec. Lt. L. G. Davies is cancelled.

Administrative Branch.—Lt. (temp. Capt.) F. R. Bush to be temp. Maj. while empld. as Maj., June 28th.

W. H. Wynnsford (Ormr. and Hon. Capt., T.F., Gen. List) is granted a temp. commn. as Capt., June 22nd.

Capt. F. A. M. Rawes to be Capt., from (S.O.), June 24th.

Lts. to be temp. Capts. while empld. as Capts.:—P. E. D. Addis, T. E. Mills, June 19th; G. R. C. Oliver, July 26th.

Sec. Lt. (temp. Lt.) G. B. Redgrave to be temp. Capt. while empld. as Capt., July 26th.

Sec. Lts. (Hon. Lts.) to be temp. Capts. while empld. as Capts.:—R. J. R. Farrow, H. McG. Wood, June 6th; A. G. Buxton, June 11th.

Sec. Lt. J. A. F. Henderson to be temp. Capt. while empld. as Capt., May 30th.

Lt. (temp. Capt.) E. Newling retains his temp. rank while empld. as Capt., from (A.), Aug. 21st.

Sec. Lts. to be temp. Lts. while empld. as Lts.:—L. A. Lavender, April 2nd; W. W. Scott-Davidson, April 15th; A. H. Jones, May 27th; H. F. W. Farquharson, May 30th; G. H. Wiggins, May 31st; A. J. Tutton, June 6th.

Lts. (O.) to be Lts.:—D. F. Hurr, A. F. Tabraham, June 6th; W. J. Matthews, July 22nd; J. S. Russell-Rigby, July 23rd.

Lt. E. Edwards to be Lt., from (T.), Aug. 22nd.

Capt. E. Johnson reverts to Lt. at his own request, Aug. 17th.

The following are granted temp. commns. as Lts.:—C. E. Smith (Lt., N. Staffs R.), April 17th; J. S. Stooke-Vaughan (Lt., R.G.A., Spec. Res.), May 26th (substituted for notification in "Gazette," June 11th); L. V. Popkiss (temp. Capt., Ayr. Yeo.), and to be Hon. Capt., July 9th; H. H. Coffin, Aug. 14th (substituted for notification in "Gazette," Aug. 16th); B. J. Kirchner (temp. Lt., S. Staffs R.), Aug. 13th; P. J. Scott (Lt., R. Dub. Fus.), Aug. 17th.

J. M. Adams (Sec. Lt., Gord. Highrs.) is granted a temp. commn as Sec. Lt., and to be temp. Lt. while empld. as Lt., June 18th (substituted for notification in "Gazette," July 30th).

A. Crook is granted a temp. commn. as Sec. Lt., and to be temp. Lt. while specially empld., Aug. 26th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are con-

firmed in their rank as Sec. Lts.:—E. C. Chapman, June 30th; W. J Dayrell-Steyning, July 13th.

The following are granted temp. commns as Sec. Lts.:—F. A. Osborn, June 22nd; E. T. Fielding (Lt., R.E., T.F.), and to be Hon. Lt., Aug. 16th; G. Wilson, Aug. 22nd; W. A. Catford, and to be Hon. Lt., T. Covell, B. J. C. Hamm (Hon. Sec. Lt., Ret. Pay), V. du B. Smythe, Aug. 26th, H. S. Peacop, Aug. 27th.

Capt. G. C. May (Capt., Bord. R.) relinquishes his commn. on ceasing to be empld., Aug. 11th.

The following Sec. Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Sec. Lt.:—C. S. Keeling, J. M. Sutcliffe, Aug. 31st.

Sec. Lt. J. A. York resigns his commn., Aug. 31st.

The date of relinquishment of commn. by Capt C. Hunt is July 29th, and not as stated in "Gazette," Aug. 9th.

The notification in "Gazette," July 2nd, regarding Lt. (temp. Capt.) F. Jewell is cancelled.

The notification in "Gazette," June 7th, regarding Sec. Lt. (temp. Lt.) G. E. Smith is cancelled.

TECHNICAL BRANCH:—Lt.-Col. B. R. W. Beor, to be Lt.-Col., from (Ad.), June 6th.

Capt. F. G. Wilson to be temp Maj. while empld. as Maj., May 31st.

Lts. (temp. Capts.) to be temp. Majs. while empld. as Majs.:—W. T. Hanson, B. W. M. Williams, May 15th; H. R. Mosenthal, July 15th; W. G. Cleghorn, July 23rd.

Lts. to be temp. Capts. while empld. as Capts.:—C. King, April 1st; H. L. Connor, May 30th; T. Bell, M.M., S. T. Fripp, May 31st; L. A. Goss, June 1st; A. G. C. Dann, June 6th; T. E. Drowley, June 30th.

Sec. Lts. to be temp. Capts. while empld. as Capts:—F. R. Assinder, May 30th; (temp. Lt.) R. G. Meech, June 1st; (temp. Lt.) A. F. K. White, June 6th.

Sec. Lts. to be temp. Lts while empld. as Lts.:—(Hon. Lt.) L. W. Allen, M.C, J. P. White, April 1st; A. H. Edwards, Hon. H. G. H. Mulholland, May 1st; G. A. Spencer, May 15th; A. J. Moore, May 27th; H. S. Alger, R. Bassett, E. W. Dormer, J. W. Gage, C. N. Henderson, A. E. Millson, A. Morison, A. Walters, May 30th; W. Blackwell, A. H. Comfort, (Hon. Lt.) W. H. Hoile, A. W. McClellan, May 31st; (Hon. Lt.) E. F. Boultbee (Hon. Lt.) R. B. Dormor, June 1st; J. O Furber, (Hon Capt.) G. R. B. Martin, and to be Hon Capt., F. R. T. Pearson, June 10th.

Lts. to be Lts., from (A.):—E. W Edwards, (temp. Capt.) F. D. Grant, and relinquishes his temp. rank, V. I Hardy, B. B. Lemon, June 6th; M. B. Cole, D. Parker, Aug. 18th.

Lt. A. N. Mercer to be Lt., from (Ad.), Aug 12th.

Lt. C. H. Knight to be I t., from (K.B.), June 6th.

Lts. to be Lts., from (O.):—L. Bateman, C. S. Heaton, R. Hegan, W. G. Hunnisett, B. F Sandy, J. T. Smith, M.C., D. Taylor, June 6th.

The following Sec. Lts. (late Gen List, R F.C., on prob.) are confirmed in their rank as Sec. Lts.:—H. W. W Hatch, May 31st; S. H. Fitter, E. J. Totoonchie, July 20th; C. S. Goode, Aug. 1st; W. C. Burleigh, R. B. Whittick, Aug. 9th.

Sec. Lts. (Ad.) to be Sec. Lts.:—L. Wardley, June 3rd; E. Redpath, June 24th; A. E. Pitcher, July 3rd; L. L. Bridgman, G. H. Winkworth, S. Wootton, B. W. Wright, July 5th; J. A. Elliott, A. V. Scholes, July 7th; J. Davies, July 20th; W. H. Henstridge, July 25th; E. G. Stott, Aug. 1st; L. Evans, Aug. 3rd; W. H. E. Thomas, C. H. Hare, A. T. Davis, E. Holt, Aug. 6th; F. C Warren, Aug. 7th.

Lt. L. E. Lomas to be Sec. Lt. and to be Hon. Lt. from (Ad.), Aug. 9th.

Lts. (A. and S.) to be Sec. Lts., and to be Hon. Lts.:—S. G. Robinson, May 31st; E Marsden, July 13th; P. E. Harris, July 22nd; S Symonds, Aug. 3rd, L H. Gamble, Aug 7th; W. L. Head, Aug. 9th.

Lts. (Obsr. Officers) to be Sec. Lts., and to be Hon. Lts.:—A. Barr, July 22nd; A. A. Davis, T. P S. Summerson, B. L. Blomley, July 27th; G. W. G. Tucker, Aug 3rd; F. H. Kelf, Aug. 9th.

The following are granted temp. commns. as Sec. Lts.:—T. C. Holleyman (temp. Lt., R.W. Fus.), and to be Hon. Lt., C. C. Newton-Wade (Capt., Yorks. L.I., T.F.), and to be Hon. Capt., C. B. Swanston (temp. Lt., attd. K.O. Sco. Bord.), and to be Hon. Lt., May 31st; G. F. Antell (Lt., Can. Ord. Corps, C.E.F.), and to be Hon. Lt., June 11th; J. Cawley (temp. Lt., Manch R.), and to be Hon. Lt., July 22nd; A. D. H. Foster (temp Lt., E. Kent R.), and to be Hon. Lt., A. G. Green (temp. Lt., A Cyclist Corps), and to be Hon. Lt., Aug. 1st; W. Oddey (Lt., Essex R., T.F.), and to be Hon. Lt., E. C. Williams, M.C. (Sec. Lt., R. Muns. Fus., Spec. Res.), W. S. H. Smith (Capt, Lond. R., T.F.), and to be Hon. Capt, Aug. 6th; R. G. Michaelson (Lt., E. Ont. R., C.E.F.), and to be Hon. Lt., D. Ottewell (temp. Sec. Lt., Leic. R.), G E. Patterson (Lt., Alberta R., C.E.F.), and to be Hon. Lt., L. W. Donald (Lt. Northd. Fus.), and to be Hon. Lt, Aug. 9th; P. H. West (Lt., E. Surr. R., T.F.), and to be Hon. Lt., R. C. Broughton (temp Lt, Leic. R.), and to be Hon. Lt., July 27th.

Prob. Flt. Officer J. A Smith is granted a temp. commn. as Sec. Lt., July 27th

Sec. Lt. W. E. M. Walker relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec Lt., Aug. 31st.

The date of appt. of temp. Maj F. G. Brown is May 1st, and not as in "Gazette," June 4th.

The date of appt. of temp. Capt A. E. Verpilleux is June 1st, and not as in "Gazette," Aug. 20th.

The initials of Sec Lt. C. R. English are as now described, and not C. E, as stated in "Gazette," Aug. 6th.

The notification in "Gazette," Aug. 13th, regarding Capt. (temp Maj.) G. Waddell is cancelled.

MEDICAL BRANCH.—S. E. Duff is granted a temp. commn. as Lt., Aug. 27th

MEMORANDA.—Lt. (temp. Capt.) S S. Blackley to be temp. Maj. while holding a special appt. in the Ministry of Munitions, Aug. 19th.

Sec. Lt. W. Hallett-Carpenter is granted the hon. rank of Capt., April 1st; Lt. T. F. Legard to be temp. Capt whilst specially empld., Aug. 22nd; K. Burton to be temp. Hon. Capt. whilst specially empld., Aug. 30th; Sec. Lt. A E. Masters is granted the hon. rank of Lt., June 3rd.

The following relinquish their commns. on ceasing to be empld.:—Lt. (temp. Capt.) L. Mair, Aug. 5th; Col. (Hon. Lt.-Gen.) J. de M. Hutchinson, C.V.O., C M.G. (Vice-Admiral, R N.), Aug 10th; Lt. A. Campbell, Aug. 16th.

* * *

"With certain exceptions, all officers of the Royal Air Force who held temp. rank in the Royal Navy or Army on Jan. 1st, 1918, are confirmed in corresponding rank in the Royal Air Force, for the purpose of seny., with effect from April 1st, 1918, and will therefore be shown as promoted to such rank in the next edition of the Air Force List."

The King has granted to Lord Weir, Secretary of State for the Royal Air Force, authority to wear the Insignia of Grand Officer of the Order of the Crown of Italy, conferred upon him by the King of Italy, in recognition of his valuable services to the Allied cause while in control of the production of aircraft under the Ministry of Munitions.

WAR OFFICE, Sept. 2nd.

REGULAR FORCES.—ROYAL REGT. OF ARTILLERY.—R.G.A.—Temp. Capt. Raymond John Garmondsway Temple, from R.A.F., to be Sec. Lt., and to be secd. Sept. 3rd, 1918, with seny. from July 6th, 1915.

WAR OFFICE, Sept. 3rd.

His Majesty the King has been graciously pleased to approve of the award of a Bar to the Distinguished Conduct Medal to the undermentioned Non-commissioned Officer:—

6391 Serjt. F. Johnson, D.C.M., R.A.F. (Kettering).

For conspicuous gallantry and devotion to duty in encounters with enemy aeroplanes, with the following results:—Attacked and crashed a Pfalz scout, drove down an Albatros out of control. On previous occasions he had destroyed four enemy aeroplanes and driven three down out of control. D.C.M. gazetted April 26th, 1917.)

* * *

His Majesty the King has been graciously pleased to approve of the award of the Distinguished Conduct Medal to the undermentioned Non-commissioned Officers for gallantry and distinguished service in the Field:—

16427 Cpl. W. N. Baldwin, R.F.C. (Grimsargh).

For conspicuous gallantry and devotion to duty. During a withdrawal he collected a party of men, and, under heavy bombing attacks by low-flying enemy aircraft, succeeded in saving a quantity of valuable stores. He directed his men with great zeal and energy, and set them a splendid example of coolness and determination.

47616 Cpl. P. A. Ovenden, R.A.F. (Groombridge).

For conspicuous gallantry and devotion to duty under heavy shell fire whilst in charge of the balloon guard. In spite of heavy shelling he made repeated attempts to repair a balloon which had been damaged Later he returned with a party to remove the deflated balloon, when a shell fell amongst them, wounding five He was largely instrumental in removing them to safety.

1504 Serjt. P Spargo, R.A.F. (Liverpool).

For conspicuous gallantry and devotion to duty. When clouds were low and weather conditions unfavourable, he flew at a height of 300 ft., and in face of intense rifle and machine-gun fire dropped his bombs on the objective, destroying a machine-gun emplacement, gun and crew. He then flew along the hostile trenches, bringing machine-gun fire to bear on the occupants, and caused many casualties. He then returned to his aerodrome for more bombs, but in view of the weather conditions he was not allowed to go out again.

FROM THE COURT CIRCULAR.

WINDSOR CASTLE, Aug. 30th

The King, attended by Comdr. Sir Charles Cust, Bt., R.N., and the Earl of Cromer, left Windsor Castle this morning by Special Train, and inspected the Royal Air Force Cadet Brigade under the command of Brig.-Gen. A. C. Critchley.

Brig.-Gen. J. G. Hearson, Director of Training, was in attendance during the morning.

OFFICIAL COMMUNIQUES.

NAVAL.

ADMIRALTY COMMUNIQUÉS.

AUG. 27th.—During the period Aug 10th-25th Royal Air Force contingents, working with the Navy, have carried out bombing raids on the following objectives:—Bruges Docks, Bruges, Zeebrugge Mole, Zeebrugge, Zeebrugge Canal, Ostend Docks, St. Pierre Capelle, Solway Works, Middelkerke, Westende, Maria Aalmer; also the aerodromes at Oostacker, Ghistelles, Mariakerke, and Vlisseghem.

Approximately 27 tons of bombs were dropped.

At Bruges many good bursts were observed—direct hits being made on submarine shelter. Bursts were also observed on store sheds both sides of West Basin. Two large explosions and two big fires were caused in the docks.

Anti-submarine, reconnaissance, photographic, and fighting patrols have been maintained. Enemy shipping and land batteries have been attacked.

Our fighting squadrons have destroyed five enemy machines, and driven down five others out of control.

Four of our machines are missing.

In Home Waters during the same period seaplanes, aeroplanes, and airships have maintained anti-submarine, convoy, and hostile aircraft patrols. Enemy submarines have been sighted and attacked and mines located and destroyed.

MILITARY.

G.H.Q. COMMUNIQUÉS.

AUG. 27th, 8.37 p.m.—In spite of clouds and rainstorms, a great deal of work was accomplished by our aviators along and beyond the battle front on Aug. 26th. Contact patrols observed and reported the positions reached by our troops. Other aeroplanes dropped ammunition by parachute to our machine-gunners.

Observations for artillery fire was carried on with difficulty. Our low-flying aeroplanes bombed and fired on enemy troops and transports wherever a suitable target presented itself.

During the 24 hours 26½ tons of bombs were dropped by us. Four hostile machines were destroyed, and one other was driven down out of control. Two German balloons were shot down in flames.

None of our machines is missing.

AUG. 28th, 8.38 p.m.—On Aug. 27th our low-flying aeroplanes were again active on the battle front. In spite of clouds and rainstorms, enemy troops and transport were constantly attacked from the air with bombs and machine-gun fire. Much information regarding the progress of the fighting was supplied both by our aeroplanes and balloons.

Aerial combats were numerous. In the course of these we destroyed nine hostile aeroplanes and drove five down out of control. Seven of our machines failed to return. Two German balloons were shot down in flames. Our anti-aircraft fire also brought down a hostile scout machine. Twenty-two tons of bombs were dropped by us during the day.

Stormy weather made flying impossible at night.

AUG 29th, 8.39 p.m.—Low clouds, rain, and wind greatly inter-

fered with flying on Aug. 28th. Photography was almost impossible and observation for artillery fire very difficult.

Six tons of bombs were dropped by our aviators and many rounds fired from the air upon enemy troops and transport in the battle zone. At various points small-arm ammunition was delivered by parachute to our troops in the forward areas of the battlefield.

One enemy machine was destroyed in air fighting and another was brought down in flames by our anti-aircraft fire.

Two of our machines are missing.

At night 11½ tons of bombs were dropped by us, Cambrai junction and an aerodrome east of St. Quentin being heavily attacked.

Aug. 30th, 8.50 p.m.—Eleven hostile machines were shot down by us on Aug. 29th and ten driven down out of control. One German balloon was set on fire.

Nine of our machines are missing.

Our aviators were actively engaged in all departments of their work throughout the day. Fifteen and a half tons of bombs were dropped on a variety of targets, including Bruges Docks and many railway connections beyond the battle zone.

Unfavourable weather stopped night flying

Aug. 31st, 8.22 p.m.—The weather was cloudy on Aug. 30th, but the various activities of our Air Service were fully maintained all along the front. There was much useful observation by aeroplanes and balloons.

Twelve enemy machines were destroyed during the day, and five driven down out of control.

Four of our machines are missing

Bruges Docks and Zeebrugge Mole were heavily bombed, as well as a number of selected targets opposite to the battle zone.

In all, 25½ tons were dropped during the 24 hours.

Sept. 1st, 8.27 p.m.—Six hostile machines were destroyed in air fighting on Aug. 31st, and three driven down out of control.

Seven of our machines are missing.

In spite of low clouds, the work of the Air Force along the front was carried on throughout the day, in close co-operation with troops on the ground, by our aeroplanes and balloons. A large number of photographs were taken, and enemy movements kept under observation.

Twelve and a half tons of bombs were dropped between dawn and dusk.

At night flying was impossible.

Sept. 2nd, 7.55 p.m.—After the heavy rain of Saturday night, the weather improved on Sunday, and our aeroplanes and balloons carried on their work in a clear atmosphere and high wind.

In spite of the opposition of enemy machines, over 1,000 photographs were taken by our aviators, and many reconnaissances effected. Contact with our advancing troops was closely maintained. Our observation balloons were constantly pushed forward and these, with our artillery patrols, kept our batteries informed of numerous targets, which were successfully engaged.

Throughout the day, the area in which the Germans were retreating was searched by our low-flying aviators, who everywhere attacked enemy troops and transports with bombs and machine-gun fire, causing heavy casualties and much confusion. Bridges and railway connections were heavily bombed in enemy back areas.

In air fighting, eight enemy machines were destroyed and four driven down out of control. Six hostile balloons were brought down in flames by our aeroplanes.

Eight of our machines are missing

On the following night, bombing was continued both in the zone immediately beyond the battle line and farther east. A German aerodrome beyond St. Quentin was heavily attacked and direct hits observed.

We lost one night-bombing machine.

During the 24 hours over 34 tons of bombs were launched on different targets.

In addition to the hostile machines already reported to have been accounted for on Friday last, our anti-aircraft fire brought down a German night-bombing machine on that date.

War Office Communiqués.

Aug. 27th.—The G.O.C. Italy reports:—

Since my last report the Royal Air Force has destroyed 10 enemy aircraft.

Two of our machines are missing.

Sept. 1st.—The G.O.C. Macedonia reports:—

During the past fortnight we have brought down six enemy aeroplanes out of control.

Sept. 2nd.—The G.O.C. Macedonia reports:—

An enemy machine was shot down in flames near Seres.

* * *

The Secretary of State for War has received a Dispatch, addressed to the Chief of the General Staff, India, by Lt.-Gen. W. R. Marshall, K.C.B., K.C.S.I., Commanding-in-Chief Mesopotamian Expeditionary Force. The following extracts are taken therefrom:—

On Dec. 5th a combined column pushed forward against Kara Tepe; but progress was slow, and it was not until midday of the 6th that an assault, carried out by one infantry brigade, coupled with a flank attack by another infantry brigade, captured the position. The features of the day's fighting were the determination and dash of the infantry, their close support by the artillery, and the valuable co-operation of the flying corps with both.

On March 8th it was discovered that the Turks had vacated their Broad Wadi position, and were falling back on Salahiya. The troops were accordingly pushed forward, and the R.F.C., which co-operated by bombing and machine-gun fire, caused many casualties and much confusion amongst the retreating columns of the enemy and their transport. Hit was occupied on the 9th, and Salahiya on the 10th, the Turks retreating to Khan Baghdadi.

In addition to the operations on the Diala, Tigris and Euphrates, and the activities towards Kirmanshah, to which I have referred, numerous minor operations have been carried out on all fronts. These consisted generally of reconnaissances by cavalry and light armoured motor-cars and by bombing raids by the Royal Flying Corps.

Throughout the whole period covered by this Dispatch the work of the R.F.C. has been, as usual, perfectly admirable, and enemy machines, which endeavoured at one time to carry out raids on our camps and communications, were either driven off or brought down. Many reprisals were also carried out on the enemy aerodromes and camps, both by day and night. During all operations the R.F.C. have co-operated with other arms, cavalry, artillery and infantry, in the closest and most effectual way, whilst the pursuit of the retreating enemy columns has been harassed by our machines in the boldest manner, both by bombing and machine-gun fire.

AIR FORCE.

Air Ministry Communiqués.

The following dispatches have been received from the Headquarters of R.A.F. Independent Force in France:—

Aug. 27th.—Further details have now been received of the attack on Mannheim on the night of the 25th-26th instant. The attack was delivered from a height of 2000ft., the pilots narrowly avoiding some chimneys.

Searchlights were flashed almost horizontally, lighting up the whole town, and an intense barrage just over and nearly parallel to the roofs of the houses was put up in a vain endeavour to shoot down our machines.

The explosions caused by the bombs were very heavy, and in view of the height at which they were dropped very considerable damage is certain. Every bomb was seen to burst on the target.

All our machines returned safely.

Aug. 30th.—On the morning of the 30th instant our machines attacked the railway station at Conflans, and a hostile aerodrome. Direct hits were obtained both on the hangars at the aerodrome and the railways at Conflans. In the course of fighting one enemy aeroplane was destroyed.

All these machines returned safely.

Another attack was also carried out by one of our squadrons on the stations at Conflans and Thionville. This squadron engaged a largely superior number of hostile machines. Fierce fighting ensued, in the course of which one enemy aeroplane was destroyed, one out of control.

Four of our machines are missing.

Aug. 31st.—On the night of the 30th-31st our squadrons made an attack on the hostile aerodrome at Boulay (in Lorraine). Some bombs were dropped also on another aerodrome. Very good results were obtained and a fire started at Boulay aerodrome. Ten tons of bombs were dropped.

One of our machines is missing.

Sept. 2nd.—On the morning of the 2nd inst. our squadrons attacked the hostile aerodrome at Buhl (south-west of Baden) with very good results. Excellent shooting was obtained. Many direct hits were observed on hangars, and a hostile machine on the ground destroyed

All our machines returned safely

THE CASUALTY LIST.

NAVAL.

Reported Aug. 31st

Previously reported Missing and feared Killed, now officially presumed to have been Killed.—Actg. Wing-Comdr Frank A. Brock, O.B.E., R.N.

MILITARY.

Reported Aug. 28th.

Canadian Force.—Previously reported Missing, now reported by German Government Killed or Died of Wounds.—Murray, Lt. K. W., B.C.R., attd. R.A.F.

Missing.—Gordon, Lt. J. A., B.C.R., attd. R.A.F.

Reported Aug. 30th.

Australian Force.—Previously reported Missing, now reported Killed.—Bice, Lt. E. J., M.C., F.C.

Accidentally Killed.—Dunn, Lt. R. A., F.C.

Lewis, Sec. Lt. C. C., F.C.

Wounded.—Smith, Lt. J. L., F.C.

Reported Sept. 2nd.

The following officer, who was a prisoner in Germany, has arrived in Holland for internment:

Davies, Lt. T. E. H., K.R.R.C., attd. R.F.C.

Reported Sept. 3rd.

Australian Force.—Accidentally Killed.—Taylor, Lt. H., M.C., M.M., F.C.

Wounded.—Albery, Lt. F., D.C.M.

AIR FORCE.

Reported Aug. 29th.

Killed.—Barre, Sec. Lt. G. B., R. Dub. Fus. and R.A.F.
Haines, Lt. A. J., D.F.C., R.A.F.
Lawrence, Sec. Lt. P., Leins. R. and R.A.F.
Lofts, Sec. Lt. W., R.A.F.
Perring, Lt. C. R., R.A.F.
Thompson, Lt. A. R., R.A.F.
Wickett, Sec. Lt. R. C., R.A.F.

Died of Wounds.—Faulks, Sec. Lt. H., R.A.F.

Died.—Arnold, Capt. P. F., Lanc. Fus., attd. R.A.F.

Wounded.—Brokensha, Capt. H., R.A.F.; Casson, Lt. W., R.A.F.; Cooper, Sec. Lt. W. J., R.A.F.; Hirst, Lt. R. C., R.A.F.; Hunter, Capt. J. E. L., R.A.F.; Knight, Lt. L. A. W., Worc. R. and R.A.F.; Potts, Sec. Lt. J. A., R.A.F.; Thomson, Sec. Lt. J. C., R.A.F.; Uhlman, Sec. Lt. J. C., R.A.F.; Walters, Lt. H. C. W., R.A.F.

Missing.—Askin, Lt. S. C. J., R.A.F.; Beauchamp, Lt. F. E., R.A.F.; Beaufort, Sec. Lt. F. H., R.A.F.; Bryant, Sec. Lt. S. O., R.A.F.; Cryan, Sec. Lt. J. S., R.A.F.; Easton, Sec. Lt. G. C., R.A.F.; Fawdry, Lt. H., R.A.F.; Hill, Lt. R. A. G., R.A.F.; Leyden, Sec. Lt. H. P. G., R.A.F.; Macpherson, Sec. Lt. J. M., R.A.F.; Sutherland, Lt. J. L. C., M.C., W. Kent R. and R.A.F.

Reported Aug. 30th.

Killed.—Baker, Sec. Lt. A. W., R.A.F.
Brandon, Sec. Lt. E., R.A.F.
Cathles, Lt. G. K., R.A.F.
Hathaway, Sec. Lt. I. W., R.A.F.
Mitchell, Sec. Lt. J. K., R.A.F.
Pragnell, Sec. Lt. S. R., R.A.F.
Reeman, Sec. Lt. A. C., R.A.F.

Previously reported Wounded, now reported Died of Wounds—Leake, Capt. E. G., Manch. R., attd. R.A.F.

Drowned.—Rylands, Lt. W. P., R.A.F.

Wounded.—Baker, Sec. Lt. L. K., R.A.F.; Borrowman, Sec. Lt. J. J., R.A.F.; Chesters, Sec. Lt. J., R.A.F.; Dempsey, Lt. H. E., R.A.F.; Haslam, Lt. J. A. G., R.F.A. and R.A.F.; Hook, Sec. Lt. R. J., Rif. Brig. and R.A.F.; Imeretinski, Sec. Lt. C. G., R.A.F.; MacNeece, Lt.-Col. W. F., R.W. Kent R. and R.A.F.; Nudds, Sec. Lt. G. A. H., R.A.F.; West, Capt. F. M. F., M.C., R. Muns. Fus. and R.A.F.; Whitney, Lt. R. K., R.A.F.; Young, Lt. H. N., R.A.F.

Missing.—Allen, Sec. Lt. H., R.A.F.; Button, Lt. L. H., R.A.F.; Clack, Lt. L. A., K.O. Yorks. L.I. and R.A.F.; Clarke, Sec. Lt. E. O., R.A.F.; Dawson, Lt. S. A., R.A.F.; Flintoft, Lt. H. T., R.A.F.; Grant, Sec. Lt. C. F., R.A.F.; Hall, Sec. Lt. B., R.A.F.; Hartley, Sec. Lt. H., R.A.F.; Harvey, Lt. G. S., R.A.F.; Illingworth, Lt. C. F. W., R.A.F.; Jackson, Lt. W. E., R.A.F.; Macfarlane, Lt. P., R.A.F.; Martin, Lt. F. W. H., R.A.F.; Misener, Lt. M. S., R.A.F.; McIntosh, Lt. V. B., R.A.F.; Shipman, Lt. T. T., R.A.F.; Sinclair, Sec. Lt. A. S., R.A.F.; Sutcliffe, Lt. J. E. T., R.A.F.; Webber, Sec. Lt. W. H., R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—
Atkins, Sec. Lt. W. T. I., R.A.F.
Brown, Lt. E. M., R.A.F.
Burry, Sec. Lt. H. W., R.A.F.
Chubb, Lt. J. A., R.A.F.
Cowan, Sec. Lt. A. R., Lancers, attd. R.A.F.
Collett, Lt. H. S., Suff. R., attd. R.A.F.
Dunn, Sec. Lt. R. H., R.A.F.
Dunster, Sec. Lt. C. H., R.A.F.
Kemp, Sec. Lt. P., R.A.F.
Muirden, Lt. N. H., R.A.F.
Mason, Sec. Lt. H., R.A.F.
Pryor, Lt. J. W., S. Lanc. R., attd. R.A.F.
Schrivener, Sec. Lt. H. K., R.A.F.
Weaver, Capt. J., R.A.F.
Wharton, Sec. Lt. C. E., R.A.F.
Williamson, Sec. Lt. J. C., R.A.F.

PREVIOUSLY REPORTED BELIEVED PRISONER OF WAR, NOW REPORTED PRISONER OF WAR.—Robson, Lt. C. C., M.C., R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONERS OF WAR.—Carr, Sec Lt. C. V., D. of Well. R., attd. R.A.F.
Gregory, Sec. Lt. R. J., R.A.F.

PRISONER OF WAR.—Lewis, Lt. R. F., R.A.F.

MISSING, BELIEVED DROWNED.—Barbe, Sec. Lt. A. E., H.L.I., attd. R.A.F.
Mesham, Sec. Lt. J. H., R.A.F.
Price, Lt. T. J., R.A.F.

INTERNED.—Bing, Sec. Lt. W. L., Buffs, attd. R.A.F.
Bugge, Sec. Lt. F. H., R.A.F.
Davidson, Sec. Lt. L. K., R.A.F.
Pearce, Lt. L. W. C., R.A.F.

MISSING, BELIEVED PRISONER OF WAR.—Cross, Sec. Lt. H. L., R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED BELIEVED KILLED.—
Southall, Sec. Lt. W. P., R.A.F.
Williamson, Sec. Lt. J., R.A.F.

Reported Aug. 31st.

KILLED.—Angus, Lt. R. W. F., R.A.F.
Dobell, Lt. G. L., R.A.F.
Douglas, Lt. F. W., R.A.F.
Morange, Lt. L. S., R.A.F.
Morrison, Sec. Lt. C. O., R.A.F.
Pettitt, Lt. M. S., R.A.F.
Reynolds, Sec. Lt. F. W. P., R.A.F.

DIED OF WOUNDS.—Fraser, Lt. A. H., R.A.F.
Knowles, Sec. Lt. H., R.A.F.

WOUNDED.—Attwood, Sec. Lt. E. H., R.A.F.; Boyle, Sec. Lt. H. J., R.A.F.; Brown, Sec. Lt. P. L., R.A.F.; Critchley, Lt. E. P., R.A.F.; De Salaberry, Lt. B., R.A.F.; Fleming, Capt. A. L., R.A.F.; Hilborn, Capt. W. C., R.A.F.; King, Lt. F. G. W., R.A.F.; Lovell, Lt. F. R., R.A.F.; Meisenheimer, Lt. G. E., R.A.F.; Murray, Lt. G. B., R.A.F.; Pennington, Sec. Lt. W. S., R.A.F.; Saulez, Lt. J. E. W., R.A.F.; Shrives, Sec. Lt. A., R.A.F.; Stevens, Sec. Lt. V. S., R.A.F.; Sutcliffe, Sec. Lt. C. W., R.A.F.; Tod, Lt. G. D., R.A.F.; Watt, Sec. Lt. J. A., R.A.F.; Wilson, Sec. Lt. F. K., R.A.F.

MISSING.—Cullington, Sec. Lt. A. W., R.A.F.; Hardman, Capt. E. P., R.A.F.; Keepin, Sec. Lt. W. F., R.A.F.; Patman, Lt. G. H., R.A.F.

Reported Sept. 2nd.

KILLED.—Anderson, Lt. J., R.A.F.
Cangiamila, Sec. Lt. J., R.A.F.
Kerr, Sec. Lt. R. W., R.A.F.
Lance, Sec. Lt. W. G., R.A.F.
Latto, Sec. Lt. E. C., R.A.F.
MacAllister, Sec. Lt. G. W., R.A.F.
Manley, Lt. F. C. C., R.A.F.
Pierce, Sec. Lt. P. J. E., R.A.F.
Sheard, Sec. Lt. H. W., R.A.F.

WOUNDED.—Baker, Sec. Lt. L. C., R.A.F.; Bucknell, Lt. W. R., R.A.F.; Drummond, Sec. Lt. E. M., Black Watch and R.A.F.; Gilmour, Capt. C., R.A.F.; Hornby, Lt. R. G., R.A.F.; McCowen, Sec. Lt. E. L., R.A.F.; Pinfield, Lt. R. G. C., R.A.F.; Prodger, Sec. Lt. M.R., R.A.F.; Rolph, Lt. J. G., R.A.F.; Shaw, Sec. Lt. W., R.A.F.; Sheppard, P.F.O., R. St. John, R.A.F.; Wallace, Sec. Lt. N., R.A.F.; Warner, Lt. G. le R., R.A.F.

MISSING.—Bracher, Sec. Lt. H. H., R.A.F.; Brownhill, Sec Lt. E. A., R.A.F.; Campbell, Sec. Lt. J., R.A.F.; Fox, Sec. Lt. J. B., Manch. R. and R.A.F.; Jackson, Lt. C. R. H., R.A.F.; Madge, Sec. Lt. W. T., R.A.F.; McIntyre, Sec. Lt. J. B., R.A.F.

Reported Sept. 4th.

KILLED.—Haigh, Sec. Lt. J. S., R.A.F.
Horton, Lt. R.E., R.A.F.
Keller, Capt. R. L., R. War. and R.A.F.
Lee, Sec. Lt. J. V., R.A.F.
Lewis, Sec. Lt. C. C., R.A.F.
Meek, Lt. J. F., R.A.F.
Murray, Sec. Lt. R. S., R.A.F.
Ullyott, Sec. Lt. H. N., R.A.F.

DIED.—Wykes, Lt. C. E., R.A.F.

WOUNDED.—Frome, Lt. N. F., R.A.F.; Gladman, Sec. Lt. C. W., R. W. Surr. R. and R.A.F.; Jackson, Lt. N. W., R.A.F.; Jones, Lt. S. K., R.A.F.; Munslow, Lt. F. L., R.A.F.; Stirrup, Sec. Lt. H., R.A.F.

MISSING.—Atkins, Sec. Lt. C. A., R.A.F.; Bailey, Lt. E. H. P., R.A.F.; Clayton, Sec. Lt. E. H., R.A.F.; Connolly, Lt. S. D., R.A.F.; Cooper, Sec. Lt. L. G., R.A.F.; Cort, Lt. A. B., R.A.F.; Coward, Lt. S. R., R.A.F.; Douglas, Sec. Lt. R. K., R.A.F.; Davies, Sec. Lt. F. G., R.A.F.; Edgell, Sec. Lt. E. H., R.A.F.; Geary, Sec. Lt. B. C., R.A.F.; Gregory, Sec Lt. M. S., R.A.F.; Helmer, Lt. E. W., R.A.F.; Hind, Capt. I. F., R.A.F.; Irving, Capt. G. B., R.A.F.; Ivens, Sec. Lt. J. C., R.A.F.; Manzer, Capt. R., D.F.C., R.A.F.; Martin, Lt. T. C., R.A.F.; McCracken, Lt. E. C. J., R.A.F.; Metson, Sec. Lt. G. F., R.A.F.; Milne, Sec. Lt. R., R.A.F.; Mitchell, Sec. Lt. J. N., R.A.F.; Moore, Lt. R., R.A.F.; Risk, Sec. Lt. J. B., R.A.F.; Walker, Lt. K. M., Wilts R. (S.R.) and R.A.F.

Reported Sept. 5th.

KILLED.—Guthrie, Sec. Lt. A. C., R.E. and R.A.F.
Ridout, Sec. Lt. A. G., R.A.F.
Ross, Sec Lt. J. S., R.A.F.
Shepherd, Sec. Lt. J. A., R.A.F.
Stone, Lt. R., R.A.F.
Walker, Lt. J. P., R.A.F.
West, Lt. P. C., R.A.F.

DROWNED.—Saville, Lt. A. E., R.A.F.

WOUNDED.—Anthony, Capt. M. S., Northd. Fus. and R.A.F.; Baker, Lt. G. H., R.A.F.; Barlow, Sec. Lt. F. C., R.A.F.; Black, Lt. J. R., R.A.F.; Hamley, Lt. N. H., R.A.F.; Hervey, Sec. Lt. V. H., R.A.F.; Hughes, Sec. Lt. H. R., R.A.F.; Llewelyn, Lt. T. F. P., R.A.F.; Mercer, Sec. Lt. W. A., R.A.F.; Miller, Sec. Lt. C. H., R.A.F.; Pendleton, Sec Lt. W., R.A.F.; Ritch, Lt. J. W., R.A.F.; Roberts, Lt. A. C., Middx R. and R.A.F.; Robertson, Sec. Lt. J. R., R.A.F.; Smithyes, Lt. E. S., R.A.F.; Walpole, Sec. Lt. H. N., Sher. For. (T.F.) and R.A.F.; Yates, Lt. S., R.A.F.; Young, Sec. Lt. J. McK., R.A.F.

MISSING.—Andrews, Sec. Lt. J. G., R.A.F.; Churchill, Sec. Lt. J., R.A.F.; Crouch, Sec. Lt. J. E., R.A.F.; Culver, Sec Lt. D. E., R.A.F.; Darlington, Lt. C. D., R.A.F.; Denny, Lt. C. H., R.A.F.; Drabble, Lt. C. F., R.A.F.; Fattorini, Lt. T., R.A.F.; Gould, Capt. H. R., M.C., R.A.F.; Howard, Sec. Lt. G. R., R.A.F.; Jinman, Lt. E. W. F., R.A.F.; O'Shea, Lt. H. A., R.A.F.; Parkes, Sec. Lt. S. J., R.A.F.; Rawley, Sec. Lt. R. W., R.A.F.; Sangster, Sec. Lt. A. B., R.A.F.; Stedman, Sec. Lt. A. R., R.A.F.

CASUALTIES AMONG WT. OS., N.C.OS. AND MEN OF THE R.A.F.
THE DATES ARE THOSE OF THE OFFICIAL LIST.

KILLED.

AUG. 31st.—Allsopp 111?? Ch. Mech. F. (Aston, Birmingham); Brown 44921 Actg. Serjt. F. B. (Hove); Hogan 9315 Serjt. P. J. (Southsea); Hoskins 99727 Serjt.-Mech. F. T. (Bristol); Tambling 200479 Actg. Ch. Mech. W. C. (Wood Green, London, N.); Urquhart 52132 Actg. Serjt. W. M. (Forfar).

SEPT. 2nd.—Capes 213323 Air Mech. 1st Cl. A. (Bethnal Green, E.); Cooper 240882 Pte. R. R. N. (Dunkirk, Notts); Dingley 240986 Pte. W. H. D. (Gateshead); Hasler 7736 Pte. 1st Cl. S. (Feltham); Metham 239166 Air Mech. 2nd Cl. C. (Hull); Shepherd 224982 Pte. 1st Cl. W. G. (Plumstead, S.E.).

DIED OF WOUNDS.

AUG. 31st.—Gray 56080 Pte. 1st Mech. W. B. (Belfast).

DIED.

AUG. 31st.—Smith 102945 Air Mech. 2nd Cl. S. A. G. (Bridgwater); Thomas 125692 Air Mech. 3rd Cl. G. (Cardiff); Young 94460 Serjt. Mech. W. (Hoddeston).

DROWNED.

AUG. 31st.—Caddick 44559 Air Mech. 3rd Cl. J. (Birmingham).

WOUNDED.

AUG. 31st.—Barber 217382 Cpl. E. A. (Harrow); Dobell 110250 Serjt. A. (Northwick, Cheshire); Edwards 66255 Air Mech. 3rd Cl. O. W. (Cowbridge); Foulkes 33520 Air Mech. 3rd Cl. T. (Manchester).

SEPT. 2nd.—Guy 99981 Serjt. Mech. H. J. M. (Reading); Humphrey 222927 Pte. 1st Cl. A. E. (Plumstead, S.E.); Lumley 245632 Serjt. Mech. T. (Swalwell); Snelling 44567 Air Mech. 1st Cl. C. R. (Walthamstow, E.); Swayne 237340 Serjt. Mech. E. A. (Near Stroud).

MISSING.

AUG. 31st.—Adkinson 245168 Air Mech. 2nd Cl. E. K. (March, Cambs.); Hartley 220217 Pte. J. F. (Manchester).

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.

AUG. 31st.—Sansome P/52910 Serjt. Mech. W. (Stone, Staffs.).

PREVIOUSLY REPORTED MISSING, NOW REPORTED BELIEVED KILLED.

AUG. 31st.—Young 217347 Serjt. L. A. F. (Streatham Hill).

PREVIOUSLY REPORTED MISSING, NOW REPORTED DROWNED.

AUG. 31st.—Claydon 235086 Pte. 1st Cl. H. A. (Grays).

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONER OF WAR

S162. 2nd.—Finney 77937 Air Mech. 1st Cl. F. (Hinckley, Leicestershire).

PRISONER OF WAR.

SEPT. 2nd.—Gladwin 222796 Pte. G. (Palmers Green, N.)

PERSONAL NOTICES.

NAVAL.

DEATHS.

BARTLETT.—Capt. Malcolm Bartlett, R.A.F. (late Flt. Comdr. R.N.A.S.), who was accidentally killed while flying on Aug. 30th, was the third son of Edward Bartlett, 38, Connaught Square, and the husband of Kathleen Bartlett, of Glencourt, Brondesbury Park, N.W.

BOOKER.—Major Charles Dawson Booker, D.S.C., R.A.F., whose death was reported last week, died in France, on August 13th, of wounds received the same day in action. He was the son of Mr. and Mrs. J. Dawson Booker, of the Cottage, Burnt House, Speldhurst, Kent, and formerly of Bedford. He was born at Eltham, Kent, on April 21st, 1897, and was educated partly at the Grammar School, Melbourne, Australia, and afterwards at Bedford House, on leaving which he entered the Royal Naval Air Service, and was gazetted probationary Flight Lieutenant on September 18th, 1915.

After serving at various stations in England he went to France in May, 1916, receiving the Croix de Guerre, with star and palm, from the President of the French Republic, for his services. In June, 1917, he was on the Somme with the R.N.A.S. Squadron, attached R.F.C., and was mentioned in dispatches, was awarded the Distinguished Service Cross for "special gallantry in the field on numerous occasions," and promoted to Flight Commander.

At the time of his death he was Acting Squadron Commander and O.C. his squadron.

His second in command writes: "It is with deep regret that I write to tell you the sad news about your gallant son and our dear C.O. He left the aerodrome on August 13th at about 10.30 a.m., and took a new pilot with him to show him the new line. Just at this time there happened to be about sixty Fokker biplanes on the line, and he was immediately attacked by ten of them. His first thoughts went to his new pilot, and he successfully drove every Fokker from the tail of his machine, enabling him to cross the line. He then dealt with the remaining five, shot three down, and was himself driven down by the remaining two. He died a gallant death, the bravest of all. By his death the squadron has sustained a great loss, and I cannot tell you how much we all miss him. He was loved by his General, Wing Comdr., and everyone who knew him. I was a proud Flt. Comdr. to be serving under him. He need never have flown, but he was up with us every day, and took part in nearly all our big scraps, and had officially crashed twenty-two Huns. Please accept the sympathy of the whole squadron on the great loss you have sustained in the death of

your son. He died so gallantly doing his duty in the greatest battle yet fought."

MAY.—Sec. Lt. Thomas Radcliffe Agnew May, R.A.F., who was killed in action on Aug. 9th, was the younger and only surviving son of the Rev. F. Granville and Mrs. May, of The Rectory, Cardynham, Bodmin. He was educated at Burnham and Sherborne (School House), entered the R.N.A.S. in August, 1917, and obtained a first-class pilot's certificate last July. He was sent to the front on Aug. 7th, and was reported killed two days later. He was 19 years of age.

ENGAGEMENTS.

HOARE—TROUNCE.—The marriage arranged between Capt. J. E. A. Hoare, D.S.C., R.A.F., only son of Mr. and Mrs. Alfred Hoare, of Charlwood, East Grinstead, and Marjorie, fourth daughter of Mr. and Mrs. S. P. Trounce, of Culroy, Truro, will take place quietly at Truro Cathedral on Thursday, Sept. 5th, at 11.30.

MAYNARD—PIM.—The engagement is announced between Maj. F. H. M. Maynard, R.A.F (late R.N.A.S.), only son of the Rev. H. M. and Mrs. Maynard, of Winkfield Vicarage, Windsor, and Irene, second daughter of Dr. J. H. and Mrs. Pim, of Southgate, Sleaford.

MARRIAGE.

BRAND—VAUGHAN.—On Aug. 17th, at St. Peter's, Belsize Square, N.W.3, Sub-Lt. Charles Neville Brand, R.N.V.R., only son of Mr. and Mrs. C. J. Brand, of 93, Fellows Road, N.W.3, was married to Nora Joyce, eldest daughter of Mr. and Mrs. Victor Vaughan, of 44, Belsize Park Gardens, N.W.3, by the Rev. A. H. Evans.

MILITARY.

DEATHS.

BAYETTO.—Those who knew Hendon in the pre-war days will regret to hear of the death of Capt. Toni Bayetto, who was well known to the habitués of the aerodrome in 1913 and 1914. Capt. Bayetto, who was of Italian origin, was born in London on May 28th, 1892. He took his certificate, No. 488, on a Bleriot monoplane at the Grahame-White School at Hendon on May 22nd, 1913, and was highly esteemed by all who knew him. Early in the war he joined the R.F.C. as an N.C.O. pilot, and won his commission by consistent good work.

CUMMINGS.—Lt. Roy Lytton Cummings, A.F.C., who was accidentally killed while on active service on Aug. 28th, was the second son of Dr. H. L. Cummings, of Tasmania, and grandson of the late W. H. Cummings, Mus. Doc. He was 22 years of age.

CHILD.—Capt. (actg. Squadron Comdr.) James Martin Child, M.C., Chevalier of the Order of Leopold, Belgian Croix de Guerre, Manchester Regt. and R.A.F., of 83, King's Road, Leytonstone, was accidentally killed on Aug. 23rd whilst on duty in Scotland. He was 24 years of age.

DRISCOLL.—Lt. Dermot O'Neil Driscoll, Middlesex Regt., attd. R.A.F., who was killed in an aeroplane accident in Yorkshire, was the son of Mrs. J. M. Driscoll, of Old Deer Park Gardens, and of Col. Driscoll, of Driscoll's Scouts in the South African War, founder of the Legion of Frontiersmen, and the commander of the Frontiersmen Battalion of the Royal Fusiliers in East Africa in the present war. Mr. Driscoll was 25 years of age.

HARDYMAN.—Lt.-Col. John H. Maitland Hardyman, M.C., Somerset L.I., eldest son of Dr. and Mrs. Hardyman, of Pulteney Street, Bath, was killed on Aug. 24th, aged 23. He was educated at Hamilton House, Lansdown, Bath, and Fettes College, Edinburgh, where he won an open scholarship. Afterwards he became assistant to the Professor of Botany at Edinburgh University, where he also took an Arts course. He was a member of the Students' Representative Council. He became F.Z.S.Scot. whilst a student, but the war broke out before he had finished his course, and he enlisted in the Somerset Light Infantry. He transferred to a flying school, where he had two accidents, and, on leaving, he became acting Adjutant to a Somerset battalion, but he resigned this appointment in order to go to the front. Shortly after getting his company he was wounded in two places. He was promoted acting Brigade-Major on the Staff last year, and in May last became Lieutenant-Colonel. He was mentioned in dispatches, and had been recommended for the D.S.O.

HARRISON.—A fatal boating accident occurred on the river Yare, near Buckenham Ferry, Norfolk, on Sept. 1st. Capt. V. W. Harrison, formerly R.F.C., of Worthing, and F. W. Ketley, aged 16, the son of the Norwich tramways manager, were sailing in a dinghy when a sudden gust of wind overturned the craft and threw both into the water. They kept hold of the boat for a short time and then decided to swim for the bank. The tide was running strong and Capt. Harrison was soon in difficulties and ultimately disappeared from sight. His body has not yet been recovered. Young Ketley, after a struggle, managed to gain the bank, and at once stripped to go to his companion's rescue, but the latter was not to be seen.

HOPKINSON.—Col. Bertram Hopkinson, C.M.G., F.R.S., Professor of Engineering at the University of Cambridge, who was accidentally killed on Aug. 26th, while flying in England, was the eldest and last surviving son of the late Dr. John Hopkinson and husband of Mariana Siemens Hopkinson.

Colonel Hopkinson was a man of many friendships and wide interests. He was born in 1874, and from St. Paul's passed to Trinity College, Cambridge, afterwards reading for the Bar. Twenty years ago, on the death of his father, he started business as a consulting engineer in partnership with Messrs. Charles Hopkinson and Ernest Talbot, and the firm was responsible for the design of the electric tramways at Leeds and Newcastle-on-Tyne, as well as other important works. In 1903 Colonel Hopkinson became Professor of Mechanism and Applied Mechanics at Cambridge University, and four years ago was elected to a professorial fellowship at King's College. He was the author of a memoir of his father and of many scientific papers. He held a technical position in the R.F.C. prior to the formation of the R.A.F., and for some time had been in charge of experimental work.

The funeral of Col. Hopkinson took place at Cambridge on Aug. 30th. A service was held in King's College Chapel, and the interment took place at St. Giles's Cemetery with the observances customary at military funerals.

The following letter has been received by his widow:—

"The King and Queen are deeply grieved to hear of the sorrow that has overtaken your family, and I am desired to convey to you an expression of their Majesties' heartfelt sympathy for you all in the loss which the death of your distinguished husband has brought to you and to the Royal Air Force.—STAMFORDHAM."

Col. Hopkinson was killed while flying alone. Apparently he lost his bearings in a cloud, and, for lack of the necessary equilibrium indicators, got into a spin which lasted till he struck the ground.

PENROSE-WELSTED.—News has been received that Capt. S. R. Penrose-Welsted, D.F.C., Croix de Guerre, Royal Irish Regt. and R.A.F., who was reported missing on July 17th, was killed in action on that date. He was the elder son of Mr. S. Q. Penrose-Welsted, of Ballywalter, Castletownrock, Co. Cork, and was educated at Rossall and Sandhurst. He was gazetted to the Royal Irish Regiment in 1909, and on the outbreak of war he was attached to the 5th battalion of that regiment, and went with them to Gallipoli in 1915, and there he was severely wounded. On recovery, he rejoined his regiment on another front. He transferred to the Royal Flying Corps in 1916, and met his death leading his flight in action over the enemy's lines. He was 29 years of age.

ROY.—Lt. Indra Lal Roy, R.A.F., who was killed in action on July 22nd, was the second son of Mr. P. L. Roy, Director of Public Prosecutions, Calcutta, and Mrs. P. L. Roy, 67, FitzGeorge Avenue, W.14.

Lt. Indra Lal Roy, R.A.F., was one of a number of ardently loyal young Indians studying here who, precluded until recently from any chance of obtaining commissions in the Army, have found scope for striking a blow for the Empire in the new arm of our forces. His elder brother had enlisted in the H.A.C. as a private within a few weeks of the outbreak of war, and as soon as he himself reached military age, in April, 1917, he left St. Paul's School and the prospect of successful competition three or four years later for the Indian Civil Service, and within a few months qualified for a commission and a pilot's certificate in the Royal Flying Corps. He went to the front last October, and did fine work until March, when his machine was brought down, but he was rescued from capture in an injured and unconscious state. In May the doctors permitted his return to do work as equipment officer, but within a few weeks he was medically passed for flying.

SAVAGE.—Lt. Henry William Savage, R.A.F., who was killed, with his observer, Lt. Hall, R.A.F., at the front on Aug. 14th, was the third son of ex-Inspector Savage, Kent County Constabulary, of Tonbridge. It appears that his machine came in contact with a balloon cable, and was completely wrecked. In 1910 he joined the West Kent Yeomanry, was called up at the outbreak of war, and quickly gained the rank of Serjeant. He went with his regiment to Gallipoli, and landed at Cape Helles. Later, he was in Egypt, and took part in the fighting in Palestine. He had several times been offered a commission, and he eventually accepted, and, taking up flying, obtained his wings at Cairo. He afterwards returned to England and underwent further training, proceeding again to the front last March, when he was promoted Lieutenant.

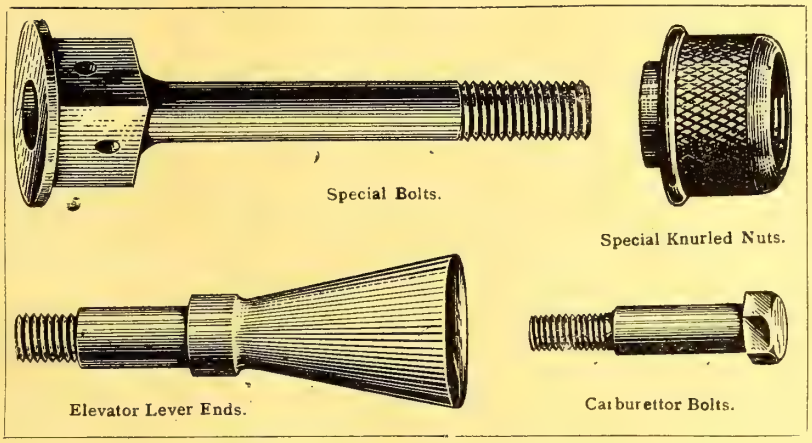
SCRACE.—Lt. John Scrace, R.A.F., whose death was announced last week, was educated at Luton, where his boyhood was spent, King's School, Rochester—in his last term there he gained eight prizes at the school sports, besides holding two challenge cups—and Cambridge, gaining an open scholarship at Peterhouse. While at Cambridge he was chosen for a seat in one of the trial eights, but was unable to row owing to illness. His intention had been to enter the ministry, but in August, 1915, he took up a commission in the Buffs, and at one time held the position of

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brigade bombing officer and other appointments as instructor; and when he transferred to the R.A.F. he was retained in this country again as instructor. The accident through which he met his death is stated to have been caused by the breaking of one of the top planes.

WHITAKER.—Capt. Victor John Whitaker, R.A.F., reported missing on April 6th, 1917, and now officially presumed to have died on or about that date, was the second son of Dr. J. Smith Whitaker, of the National Health Insurance Commission, and Mrs. E. L. Whitaker, and was born at Great Yarmouth on June 22nd, 1897. He was educated at University College School, where he was a member of the Officers Training Corps. In October, 1915, he received his commission as second lieutenant in the Lincolnshire Regiment, was transferred subsequently to the Royal Flying Corps, obtained his wings in May, 1916, and proceeded at once to the front, where he served continuously, except for two short periods of leave, till his death. He was promoted (temporary) captain and flight commander in Feb. 1917, being still only 19. He was brought down on Good Friday while engaged on a difficult reconnaissance of enemy positions.

WILSON.—Lt. Henry Bernard Wilson, Royal Warwickshire Regt., was the youngest son of the late Rev. Herbert Wilson, Stratford-on-Avon. He was killed whilst flying on Aug. 15th.

Engagement.

PACKE—BARCLAY.—The engagement is announced between Capt. E. A. Packe, Oxford and Bucks. L.I., attd. R.A.F., of Wickham Bishops, and Claudia, daughter of the Rev. and Mrs. C. W. Barclay, of Hertford Heath.

Marriages.

BORET—NEWTON.—On Aug. 22nd, Capt. (and Flt. Comdr.) John A. Boret, M.C., A.F.C., R.A.F., third son of Mr. and Mrs. Boret, of Chiswick, was married to Christine Victoria, daughter of Mr. and Mrs. Newton, of Bedford Park.

HOPPS—COHEN.—On Aug. 31st, at St. Saviour's, Alexandra Park, Lt. F. Linden Hopps, K.O.Y.L.I. and R.A.F., was married to Cecile, elder daughter of Mr. and Mrs. A. Cohen, of "Beamsmeor," Alexandra Park.

Births.

GOSSAGE.—On Aug. 24th, at 131, Earl's Court Road, S.W., the wife of Lt.-Col. E. L. Gossage, M.C., R.A.F.—a son.

MARTIN.—On Aug. 28th, at 13, Princes Gate, London, to Irene, wife of Lt. Milton Martin, Canadian Infantry and R.A.F.—a daughter.

RAMSEY.—On Aug. 29th, at a nursing home at Southampton, the wife of Capt. J. Ramsey, M.C., R.A.F., a son.

SMART.—On Aug. 20th, at Chester, the wife of Capt. C. D. Smart, M.C., R.A.F, of a son.

YATES.—On Aug. 29th, to Yvonne (*née* Tilden Smith), wife of Lt.-Col. H. I. F. Yates, M.C., R.A.F., of Wangford Hall, Brandon, Suffolk, a daughter.

* * *

Capt. H. W. E. Barwell, M.C., R.F.C. (Observer), and Capt. R. F. Fenn, R.F.C. (Pilot), were both reported missing on March 25th. Will anyone writing to prisoners in Germany kindly inquire for news of them? Information will be gratefully received by William Barwell, 26, George Road, Edgbaston, Birmingham.

* * *

Capt. A. P. Maclean, R.F.C., and Lt. F. H. Cantlon, R.F.C., were both reported missing on March 18th. If those writing to hospitals and camps in Germany would kindly make inquiries, the news would be gratefully received by Miss Agar, Gayton, Parkside, Wimbledon.

AIR FORCE.

Deaths.

ANDERSON.—Lt. John Reginald Anderson, R.A.F., who was killed in action on Aug. 13th, was the only son of Mrs. John Anderson, of 82, Wood Vale, Honor Oak, S.E. He was 21 years of age.

BARLOW.—A verdict of "Accidental Death" was returned at an inquest in Yorkshire on Sept. 2nd concerning the death of Sec. Lt. Harold Frederick Barlow, R.A.F., who was killed in an aeroplane accident. He was 20 years of age.

BELL.—Sec. Lt. Oliver Bell, R.A.F., Independent Force, who was killed in action on Aug. 24th, was the younger surviving son of William Bell, of Disley, Cheshire. He was 19 years of age.

BRANDON.—Lt. Edgar Brandon, R.A.F., who was killed on Aug. 11th, was the third son of the late Edgar Brandon and of Mrs. Brandon, of Newlands, Bedford, and was educated at Bedford Grammar School. At an early age he went to Tasmania, where he was doing well. He obtained a year's leave to come home, but it took him five months to reach England, where he landed in October, 1917. He was in the Inns of Court for a time, and then got a commission in the R.A.F. as observer. He had been at the front only a few weeks when he was killed.

BROWN.—Sec. Lt. Alexander Claud Garden Brown, R.A.F., who was reported to have died on May 5th of wounds received on May 3rd while flying on reconnaissance, was the fourth son of A. G. Brown, Mottistone House, I. of W. He was 27 years of age.

ELWORTHY.—Lt. S. R. Elworthy (pilot), R.A.F., who died on Sept. 1st from injuries received whilst flying on service in England, was the second son of Mrs. Elworthy and the late F. F. Elworthy, of Grove Hill, Hemel Hempstead.

GALLOWAY.—Flt.-Cadet Robert Kirkwood Galloway, R.A.F., aged 23, of Dunbar, lost his life while flying in East Sussex. Misjudging his speed in turning, he lost control of his machine, which crashed to the ground. He died subsequently in hospital. At the inquest a verdict of accidental death was returned.

HOJEL.—Sec. Lt. J. G. Hojel, R.A.F, who was accidentally killed on Aug. 21st whilst flying abroad, was the eldest son of A. C. Hojel, of Mexico City, and Mrs. Hojel, Bognor. He was 18 years of age.

JAMESON.—Lt. James Bruce Jameson, R.A.F., who was killed in action on Aug. 24th, was the youngest son of Maj. and Mrs. T. M. Jameson, Rye, Sussex. He was 25 years of age.

LAVINGTON.—Sec. Lt. Laurence James Lavington, R.A.F., who was killed in action on Aug. 22nd, was the younger son of Mr. and Mrs. A. J. Lavington, Maesmor, Gordon Road, Claygate. He was 18 years and 11 months old.

MACBETH.—Lt. Robert Edward Andrew MacBeth, B.A.Sc., R.A.F., who was accidentally killed on Aug. 19th, was the third son of William John and Susanna Colquhoun MacBeth, of Parkdale, Toronto, Canada.

MANZETTI.—Sec. Lt. Charles Albert Manzetti, R.A.F., of London, was killed while flying in East Sussex. The machine dived to the ground behind some trees. Mr. Manzetti was only recently married. At the inquest, where a verdict of accidental death was returned, it was stated that the machine was in perfect order when the ascent was made.

PALMER.—Lt. A. B. B. Palmer, R.A.F, who died on Aug. 23rd as the result of an aeroplane accident, was the son of Mr. and Mrs. A. L. H. Palmer, of 62, Twyford Avenue, Acton, W.3. He was 27 years of age.

PITHER.—Capt. C. E. Pither, R.A.F., the youngest son of the late Fras. L. Pither, of Tollington Park, N., was killed in action on Aug. 22nd. He was 22 years of age.

RUXTON.—Lt. Wilfrid Hay Ruxton, R.A.F., who died on Aug. 29th, as the result of an accident when flying, was the youngest son of the late Rev. F. D. Ruxton, Well, Yorks, and Mrs. Ruxton, Westfield House, Richmond, Yorks. He was 28 years of age.

SCOTT, CUMMINGS and JEFFERIES.—During a flight in Gloucestershire on Aug. 28th two aeroplanes collided, and Lt. Scott, R.A.F., Lt. Cummings, R.A.F., and Flt. Cadet Jefferies, R.A.F., were killed.

TUCKWELL.—Lt. Humphrey A. H. Tuckwell, R.A.F., who was killed in action on July 4th, was the son of the late the Rev. Philip Tuckwell, M.A., of Woodbridge, Suffolk, and of Mrs. Tuckwell, of Bexhill-on-Sea.

Engagements.

MACLAREN—PARKES.—The engagement is announced between Lt. Duncan Maclaren, R.A.F., only son of the late Duncan L. S. Maclaren, of New York, and Mrs. Maclaren, of Brockenhurst, and Ruth Esmé Parkes, youngest daughter of the late S. Alec Parkes and Mrs. Parkes, of Enderlie, Emsworth.

MANWARING—KNIGHT.—An engagement is announced between Herbert Thomas Wickham Manwaring, R.A.F., younger son of Percy Manwaring and Mrs. Manwaring, Plovers, Horsmonden, Kent, and Violet Ellen Muriel, youngest daughter of Herbert and Mrs. Knight, Dorincourt, Pyrford, Surrey, and granddaughter of the late Sir Henry Knight, ex-Lord Mayor of London.

Marriages.

HARVEY—COOK.—On Aug. 28th, at All Souls, Langham Place, Lt. Edward Sandell Harvey, R.A.F., son of Mr. and Mrs. E. D. Harvey, of The Mount, 114, Finchley Road, Hampstead, was married to Daisy Hilda, youngest daughter of Mr. and Mrs. Charles Cook, of The Limes, Sutton, Surrey.

LINDLEY—HOWARD-PHILLIPS.—On Aug. 31st, at Christ Church, Forest Hill, S.E., Lt. Donald Lindley, R.A.F., only son of Mr. William E. Lindley, of Capri, Westgate Road, Beckenham, S.E., was married to Mona Gertrude, eldest daughter of Mr. and Mrs. C. Howard-Phillips, of Arundel, Queenswood Road, Forest Hill, S.E., by the Rev. C. R. Bailey, M.A.

RAPIER—BELLAMY.—On Aug. 28th, Mr. Harold Rapier, R.A.F., of Winnipeg, Canada, was married to Mrs. J. Bellamy, (Hilda Bellamy).

TOLLEMACHE—BARNETT.—On Aug. 7th, very quietly, owing to mourning in both families, at St. Peter and St. Edward's, Westminster, Capt. C. Tollemache, R.A.F., eldest son of Hon. R. C. and Mrs. Tollemache, of Hove, was married to Nancy, second daughter of Mr. and Mrs. W. Barnett, of Dublin, by the Rev. Father Foley, C.F.

Births.

BELL.—On Sept. 1st, at 34, Berkeley Square, Clifton, Bristol, Adéle, the wife of P. H. Bell, R.A.F., of a daughter (Rosemary).

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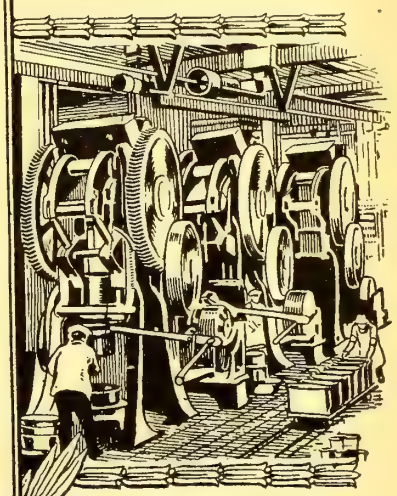


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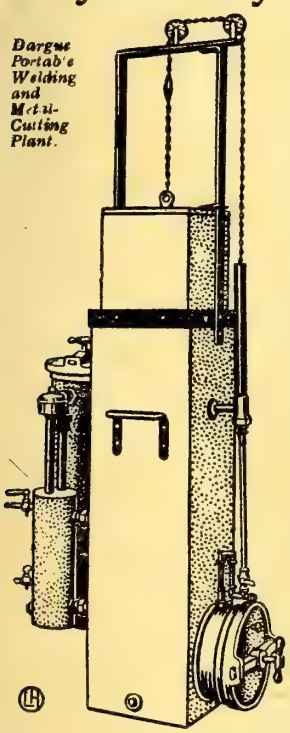
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HOWARTH.—On Aug. 29th, at "Frognal," 63, Hodford Road, Golders Green, N.W.4, Maisie, the wife of Capt. Norman Howarth, R.A.F., of a daughter.

LANE.—On Thursday, Aug. 24th, at 4, Penlee Gardens, Stoke, Devonport, to Capt. Rex Willington Lane, R.A.F., and Ailsa, his wife—a daughter.

LUGET.—On Aug. 29th, at St. Faith's, Ealing, Dorothy (*née* Stimpson), the wife of Lt. F. B. Luget, R.A.F., of a daughter.

VANE-HUNT.—On Aug. 28th, at Wray House, Warblington, Havant, the wife of Lt. Ilan Vane-Hunt, R.A.F., of a son.

* * *

Sec. Lt. J. Q. F. Walker, R.A.F., and Capt. P. O. Robinson, M.C., R.A.F., have been missing since March 31st. Will friends writing to prisoners in Germany or behind German lines taken about that date kindly inquire for news and communicate with J. F. Walker, 15, The Crescent, Bedford?

FOREIGN COMMUNIQUES.

FRANCE.

Aug. 26th.—Army of the Orient.—British aviators bombarded enemy bivouacs in the region of Demirhissar. A Serbian aviator brought down an enemy machine in the region of the Dobropolje.

Aug. 27th.—Army of the Orient.—British aviators bombed enemy camps in the Demirhissar region.

Aug. 28th.—Army of the Orient.—British aviators bombarded the camps to the north of Doiran.

Aug. 29th.—British aviators bombarded enemy bivouacs north-west of Doiran.

Aug. 30th.—During the day of Aug. 29th our bombing machines attacked the forest of Pinon and the railway station of Anizy-le-Château and the crossings of the Ailette in this region. More than 48 tons of projectiles were dropped.

Twenty enemy aeroplanes were shot down or fell in a damaged condition. One enemy captive balloon was set on fire.

Army of the Orient.—Allied aviators bombarded the enemy cantonments north of Doiran and Monastir. Serbian aviators brought down an enemy machine in the region of Dobropolje.

Aug. 31st.—During the day of the 30th low clouds and mist greatly hampered aerial operations. Nevertheless, three German aeroplanes were brought down, and two captive balloons were set on fire. During the night, in spite of heavy fog, some aeroplanes were able to drop 3,150 kilogrammes (over three tons) of bombs on objectives in the Eastern region, on the railway stations of Conflans, Chambley, and Thiaucourt, and the Hagondange (north of Metz) and Karlschuette workshops at Thionville.

Sept. 1st.—In spite of the unfavourable weather, our aircraft carried out important work, particularly in conjunction with the infantry in the battle zone. Eighteenemy aeroplanes were brought down or fell in a damaged condition.

Flying at a low altitude, our day-bombarding machines dropped 23 tons of bombs on enemy concentrations and convoys in the region of Vauxaillon, Neuville-sur-Margival, Laffaux, and Nauteuil La-Fosse. Several tens of thousands of cartridges were fired in the same regions on enemy troops.

Army of the Orient.—The British Royal Air Force bombarded enemy encampments in the Struma Valley.

Sept. 2nd.—The bad weather hindered aerial operations during the day of Sept. 1st. Nevertheless, four enemy aeroplanes were shot down and one captive balloon was set on fire.

Our reconnoitring aeroplanes in the course of their expeditions carried out several bombardments in the region of Lt. Fere. Convoys on the road system round St. Quentin and La Fère were machine-gunned.

During the night nearly 10 tons of bombs were dropped on railway stations, and in particular on those of Marles, Laon, and Ham, causing fires. In addition, eight tons of projectiles were dropped on the bivouacs in the region of Villers-Franqueux and on the railway stations of Maison Bleue and Cignicourt. On the latter railway station alone four and a half tons of projectiles were dropped, causing heavy damage.

ITALY.

Aug. 27th.—Our aircraft in unfavourable atmospheric conditions carried out successful bombardment actions on enemy aviation camps and other military objectives.

Aug. 28th.—During the day British flights successfully attacked the enemy's front lines with machine-gun fire and carried out deadly bombardments in the lines of communication.

Aug. 30th.—Our and Allied aeroplanes bombarded hutments in the Vezzona Basin (Lavarone Plateau) (head of the Astico), and from a low altitude attacked motor-lorry columns with machine-gun fire. Two hostile machines were brought down in air combats.

Sept. 1st.—Yesterday morning our aeroplanes reached Franzensfeste and, flying very low, dropped bombs with accuracy and effect on the important railway establishments there. Other bombardment operations were carried out during the day on the enemy's front lines and back areas by our own and Allied aviators.

Last night Army and Navy airships bombarded the military works of Pola and the station and depots of Primolano (Brenta). Six hostile machines were brought down in air fighting. A seventh hit by the artillery fell near Noventa di Piave.

Sept. 2nd.—Duringt he day the enemy's front lines were repeatedly attacked with success by our and Allied aviators. A powerful Italian flight flying to the east of Livenza bombarded with visible results a hostile aviation camp. Numerous enemy machines which arose to fight were dispersed by our escorting planes.

GERMANY.

Aug. 27th.—First Lt. Loerzer, Lt. Koenneko, and Lt. Bello won their 31st; Lt. Huey his 26th, 27th, and 28th; Lt. Laymann his 23rd; First Lt. Grein his 22nd; and Lt. Blume his 28th aerial victories.

Aug. 31st.—We have shot down in the last two days 52 enemy aeroplanes First Lt. Lörner won his 32nd and 33rd, Lt. Hennecke (? Konnecke) his 32nd, and Lt. Laumann his 28th air victory.

Sept. 2nd.—On both sides of Vaulx-Vraucourt an approaching tank attack failed. During this time the occupants of an aeroplane of Aerial Division No. 252—Lt. Schweitteger and Vice-Serjt.-Maj. Guenter—shot a tank into flames with their machine-gun, and destroyed another by well-directed artillery fire.

AUSTRIA.

Aug. 26th.—Italian Theatre of War.—In the night Aug. 24th-25th, during the pursuit of an enemy squadron, our aviators attacked an aerodrome near Padua, causing considerable damage.

U.S.A.

Aug. 30th.—During the day the railroad yards at Barricourt and Conflans were effectively bombed by our aviators. All of our machines have returned.

BELGIUM.

Aug. 27th.—Sous Lieut. Coppens brought down a balloon in flames in the Zillebeke region, his 28th victory.

TURKEY.

Aug. 26th.—On the night of Aug. 25th-26th enemy aviators carried out another attack on Constantinople. Our barrage fire prevented them from flying over the town. Some bombs fell in our outer quarter of the city, but caused no damage.

Undated.—On the night of Aug. 27th-28th enemy aviators dropped bombs and manifestos on Constantinople. Only minor damage was caused.

Aug. 29th.—One of the enemy aeroplanes which dropped bombs on Constantinople on the night of Aug. 27th was forced by our anti-aviation fire to come to ground in the neighbourhood of Constantinople. The machine was set on fire. The aviator, a British captain, who was wounded, was taken prisoner.

THE LATE CAPTAIN STRASSER.

Capt. von Pustau, the Naval Correspondent of the "Täglische Rundschau," is quoted in the "Times" as having given a remarkably interesting account of Capt. Strasser, who was killed in the destruction of his airship during the attempted raid on England on the night of Aug. 5th. After enlarging upon Capt. Strasser's services in promoting and improving the construction of Zeppelin and Schütte-Lanz airships, Capt. von Pustau says:—

His greatest service, however, consists in the organisation of the airship attacks on England. He prevailed over objections of many kinds, and succeeded in obtaining the necessary permission for the first cruise to England, which was undertaken on the night of Jan. 19th, 1915, by several naval airships under his command. About 80 bombs were dropped between Yarmouth and King's Lynn. Although it was only a great coastal cruise, this first undertaking had a tremendous effect. During the first months of war the English had yielded to the hope that the airship attacks which had so often been predicted before the war would never come. They now had proof to the contrary, and the country violently attacked the Government on the ground that it had not been sufficiently prepared; under the pressure of public opinion comprehensive defence measures were immediately taken on land and sea and in the air. Tens of thousands (sic) of officers and men, and many hundreds of guns, searchlights, aeroplanes, and patrol craft, which otherwise could have been used offensively, were tied down on the South-East and East coasts of England and in the London district.

But this fine success was for Strasser only the first step to his greater goal. He was not satisfied with a limited area, but intended that all England and the South of Scotland should be kept in permanent alarm and hurt as much as possible. So on April 14th, 1915, he began the long series of airship attacks, in the course of which all the more important coastal establishments, harbours, and building yards as far as the Firth of Forth, the great industrial districts in the Midlands, and especially London itself, were sprinkled with innumerable light and heavy explosive and incendiary bombs.

Capt. von Pustau says that the great object of Capt. Strasser was to cause general disturbance in England, and especially to force the British Government to employ large parts of the Air Service in home defence. Strasser, although he received frequent promotion, insisted on taking part himself from time to time in the air raids. The article concludes:—

The work which he began will be continued on his lines by others, and the name of Strasser will remain written in golden letters in the history of the German Navy for all time as that of one of our most efficient and successful naval officers.

[Capt. von Pustau is well known to many people concerned with aviation in this country as an honourable enemy. Through-

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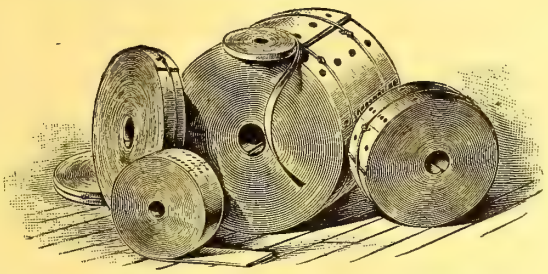
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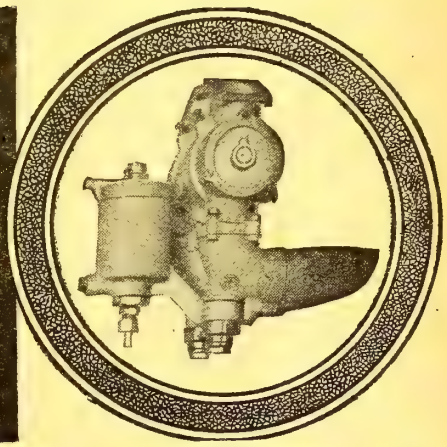
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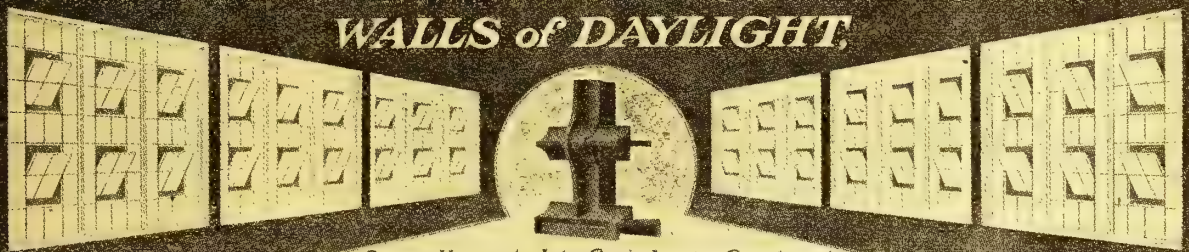
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out the war his writings have been those of an officer and gentleman, and the tone of the obituary notice quoted above shows him at his best, as a Naval officer to whom war is war and duty is duty, without malice or hatred. One compliments him on the tribute which he has paid to a skilful airship pilot, and one salutes the memory of Capt. Strasser, a brave man who died doing his duty as he saw it.—Ed.]

SIR JOSEPH JONAS' CASE.

It is officially announced that the King has been pleased, by Letters Patent under the Great Seal of the United Kingdom, to degrade Sir Joseph Jonas from the degree of Knight Bachelor. One assumes that his Majesty acted on the initiative of his political advisers, and not of his own knowledge of the facts.

Sir Joseph Jonas was recently convicted at the Central Criminal Court, London, under the Official Secrets Act, 1911, of misdemeanour, in that he aided and abetted Charles Alfred Vernon unlawfully to obtain information respecting Vickers' rifle works at Crayford, Kent, which was calculated to be useful to an enemy. He was fined £2,000.

A former Lord Mayor of Sheffield, he was chairman of the firm of Sir Joseph Jonas, Colver, and Co. (Limited), steel manufacturers, and has for many years occupied a leading position in Sheffield. Born at Bingen-on-the-Rhine in 1845, he came to this country when he was 21, and was naturalised in 1875. He was first German Consul in Sheffield, and during his Lord Mayoralty received from the Kaiser the Order of the Prussian Crown. He was knighted by King Edward in 1905.

The last case of degradation from knighthood, and the first for very many years, was that of Roger Casement, who was hanged for high treason, and one cannot bring oneself to regard this as in any way an analogous case. Sir Joseph has been for many years admired and respected in Sheffield, where his personal generosity and his public spirit won for him a high place in the esteem of all classes.

His business acumen and industry created a great business, which to-day gives employment to a great number of people, and provides this country with valuable war material. His offence was one which is committed constantly in time of peace by firms in fierce competition with one another, and it does not seem possible that it had any evil results. It was committed long before the war, and during that same period a British armament firm of the highest standing was actually supplying to the German Government quantities of their latest type machine-guns, which the War Office refused to buy for the British Army.

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Joseph Jonas, despite all his good work, is heavily punished for an offence of far less magnitude. It is not surprising therefore to hear that the opinion in Sheffield is that the whole of Sir Joseph's case was brought up because he offended certain Government officials or their friends.

ITALIAN NOTES.

One learns from the Italian Press that a British Aeronautical Commission numerically sacred—they are seven—under the Director-General of Aircraft Production supported by the Chief of the Motor Production Department and five officers of superior rank, with, according to the local Press, Chinese names, have been here to settle important questions of contracts and supplies. For whose benefit the members of the Commission have been "grilled" at Rome, Milan, Turin, Genova, etc., in August one cannot even glean. One hopes that their travelling was all done in the cool skies, anyhow.

Lt.-Col. Verduzio wishes it to be known more generally that—as I wrote in my last notes—the credit for the designs of the S.V.A. aeroplane goes to Maj. Savola jointly with Limself, and for its production to the Ansaldo firm. Hence the initials S/avoia, V/erduzio, A/nsaldo.

If justice could be always and everywhere done to all men, however, one ought also to praise other great men. Say the people who produce the new observation balloon used on this front, which has beaten all altitude records for this type

Also the merits of the perfected designs of the Hispano-Suiza engine need attachment to some name or other that one may know to whom to offer gratefulness when the total eclipse of the Hun world comes off. The use of the engine is so much more general than one hears commonly.

The Lord Mayor of London, who has been on a visit to this country, went up in M.1 for a trip over the Capital and surrounding country and was apparently very enthusiastic as to that vessel's comfort. The Minister for War and the High Commissioner of Aviation accompanied by Sir Charles Hanson.—T.S.H.

A POLITICAL APPOINTMENT.

The Executive Committee of the British Commonwealth Union has appointed Capt. C. W. F. Morgan, R.A.F., as assistant political organiser. Capt. Morgan, chairman of the Surrey Division of the Comrades of the Great War, is the son of Capt. C. H. Morgan, R.N.

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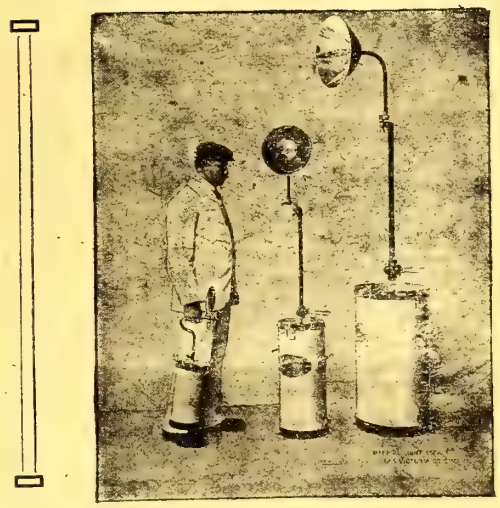
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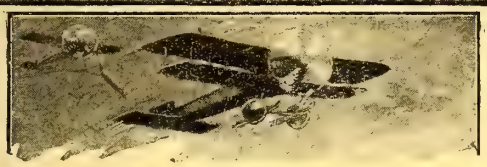
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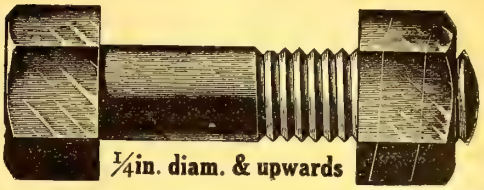
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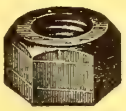
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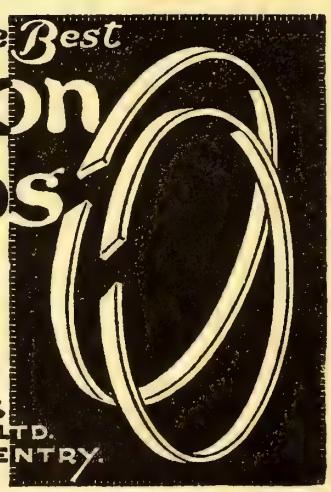
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Printed for The Aeroplane and General Publishing Co., Ltd., by Bonner & Co., The Chancery Lane Press, Rolls Passage, London; and Published by The Rolls House Publishing Company, Ltd., at Rolls House, Breams Buildings, London.

THE AEROPLANE

Edited by C. Gurney

WEDNESDAY, SEPT. 11, 1918

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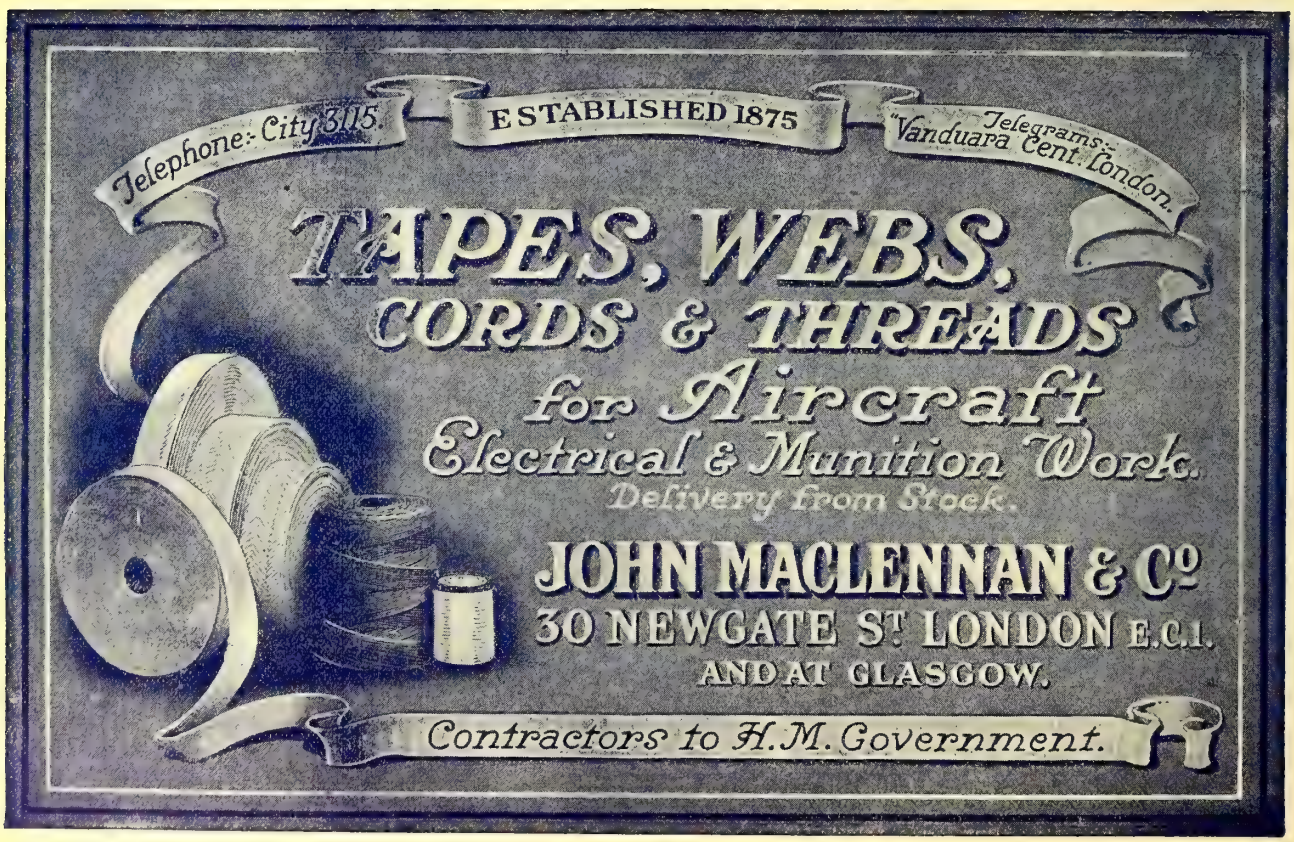
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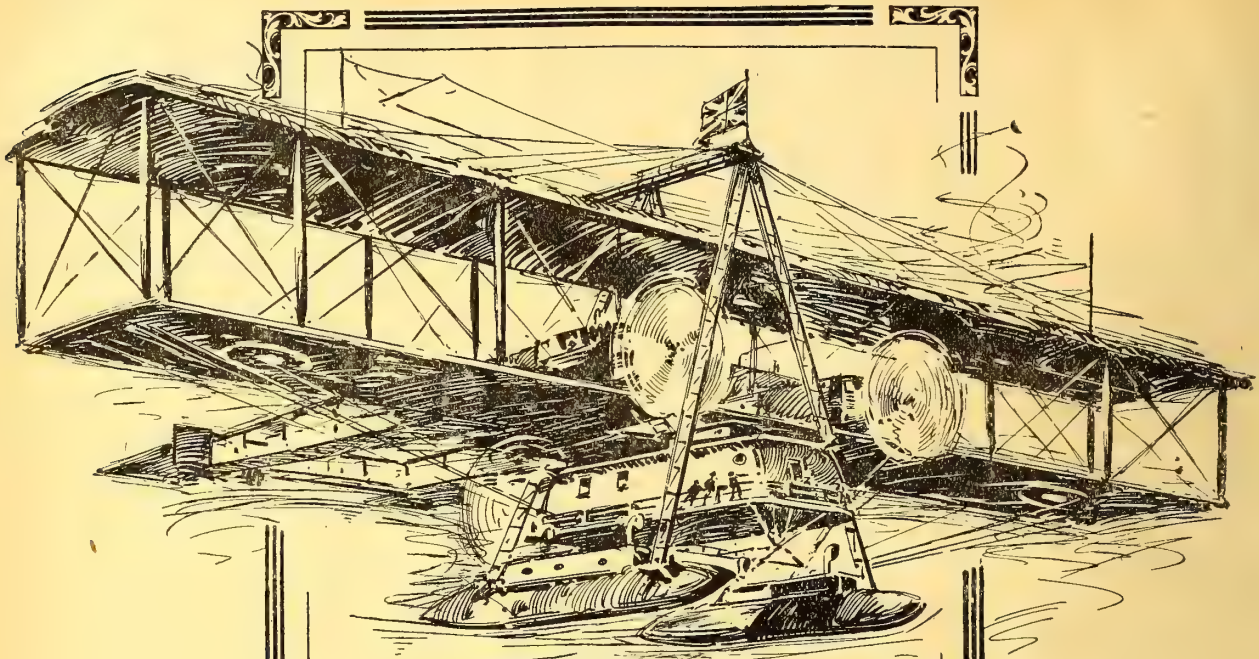
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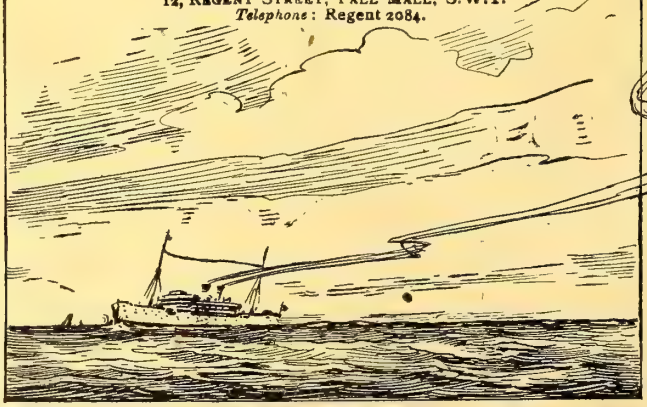
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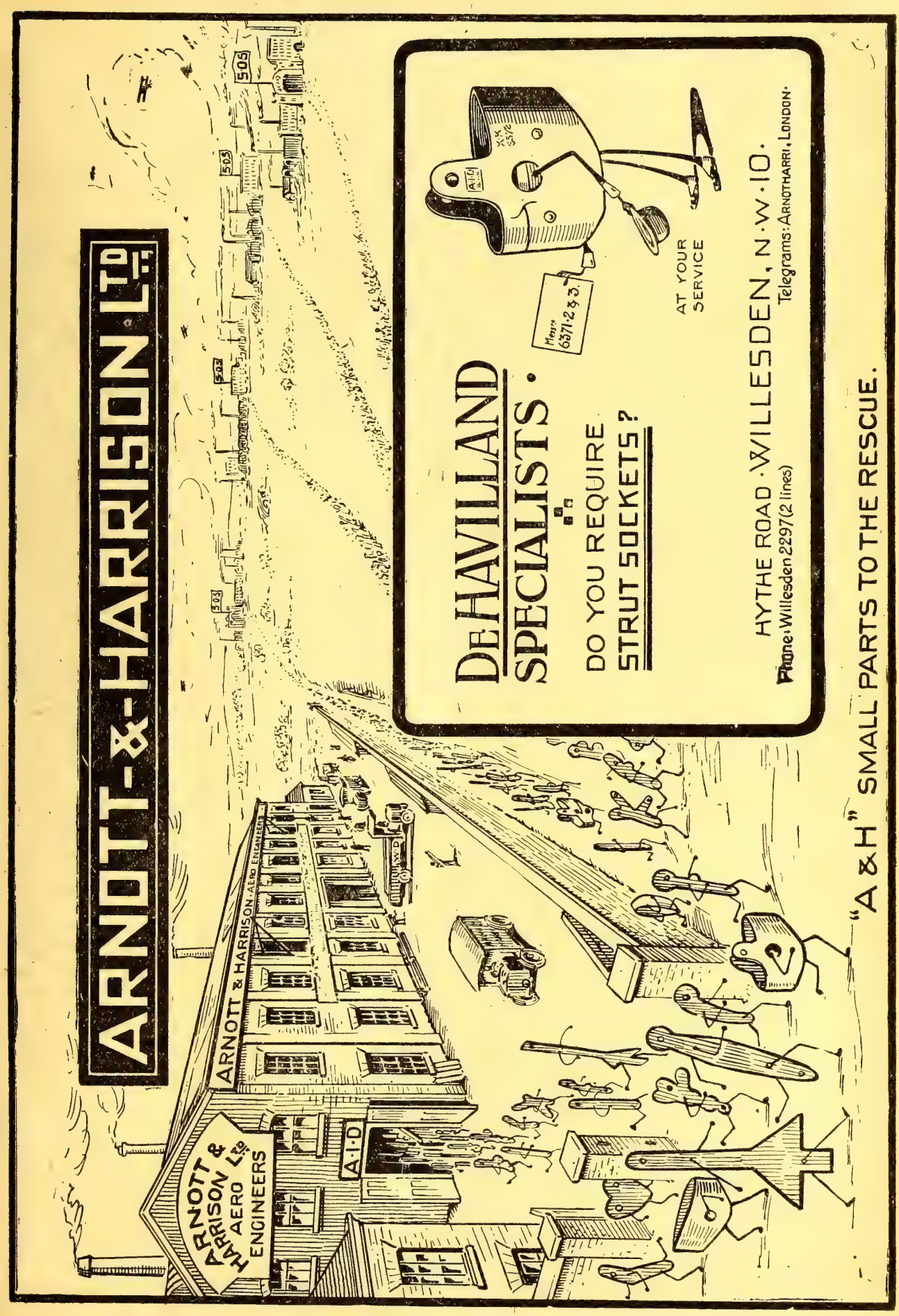
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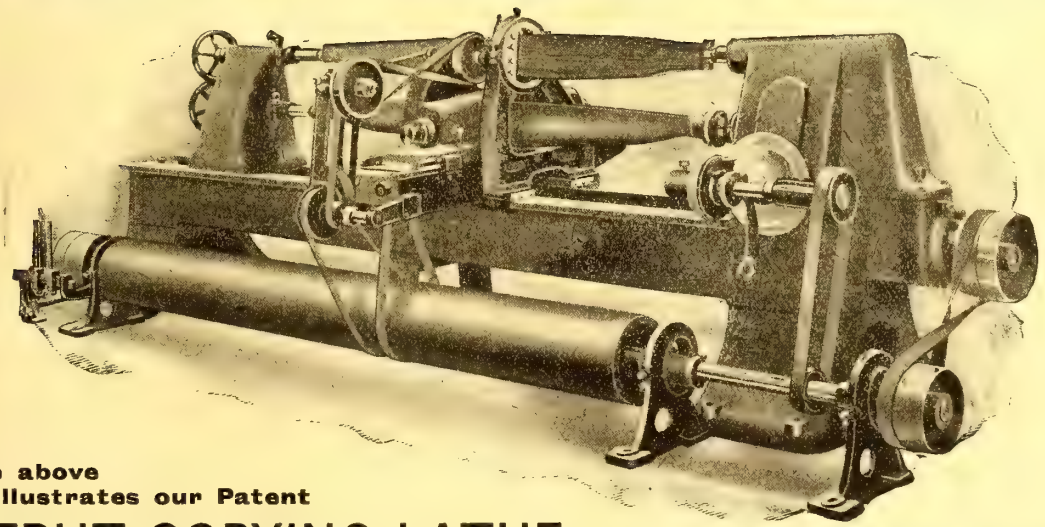
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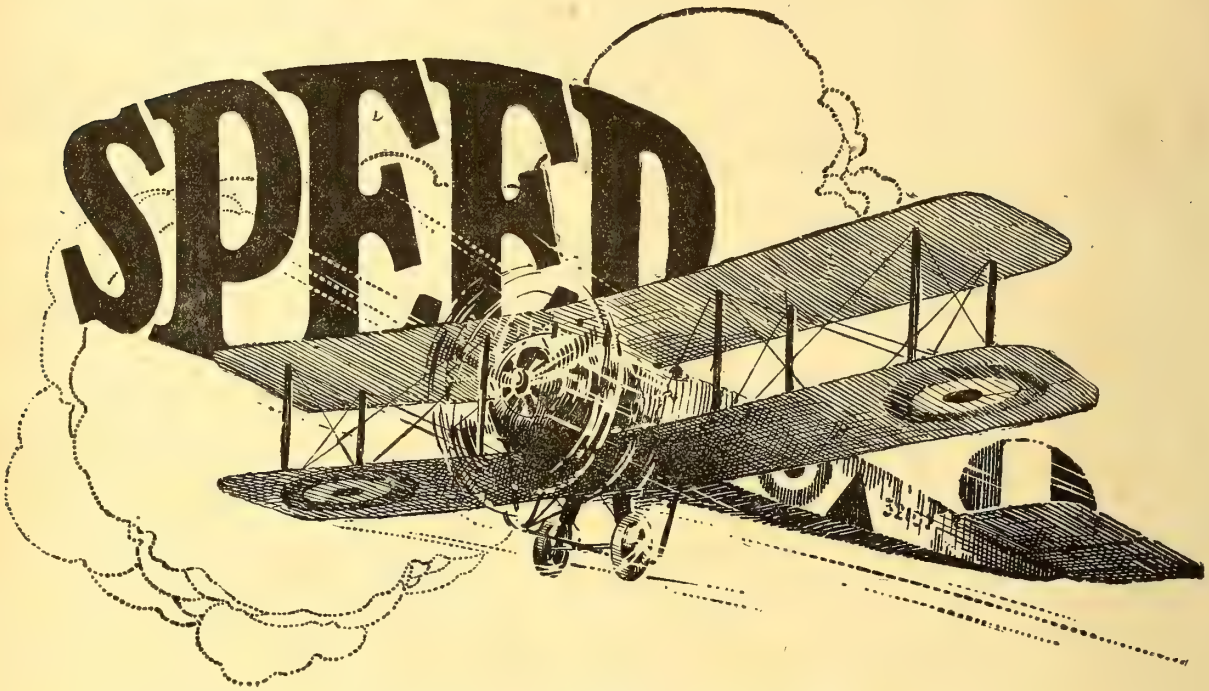
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SEPTEMBER 11, 1918 VOL. XV. NO. 11

The AEROPLANE

The Editorial and Advertising Offices of "The Aeroplane" are at 166, Piccadilly, London W.1.
Telegraphic Address: "Aileron, London." Telephone: Mayfair, 5407.
Accounts, and all correspondence relating thereto, should be sent to the Registered Offices of The Aeroplane and General Publishing Co., Ltd., Rolls House, Breams Buildings, E.C.4.
Subscription Rates, post free: Home, 3 months, 7s. 6d.; 6 months, 15s.; 12 months, 30s.
Foreign, 3 months, 8s. 9d.; 6 months, 17s. 6d.; 12 months, 35s. Canada, 1 Year, $8.
U.S.A., 1 Year, $8.50c.

ON THE PATRON SAINT OF AVIATORS.

There has been for some time a fruitful source of discussion in the question as to who is by rights the patron saint of aviators. In the very early days of flying the Prophet Elijah was generally regarded as having first claim to the appointment. It was argued that Elijah went up to heaven in a chariot of fire, which in itself was a proof of his being a practical aviator. Moreover, certain of those who supported his claims asseverated that he indubitably held the altitude record, on the grounds that if he had reached Heaven he must have beaten all mundane records, or that, alternatively, if he has not yet reached Heaven, having left the contemporary aerodrome in Palestine so many centuries ago and having been climbing ever since, he must certainly have beaten our present-day records, and the duration record as well, for nothing has been heard of him since.

The pro-Elijists might have added, if they had thought of it, that he also showed faith in the efficacy of parachutes, for after he was well under way he let down his gift of prophecy attached to his mantle, which descended on his servant Elisha, a remarkably accurate piece of parachute dropping. One is, of course, permitted to assume that the mantle in question was, in fact, a parachute, and that Elijah dropped, attached to it, full instructions in the science of prophesying—which, as readers of the early issues of this paper know, in the light of present-day events, is nothing like so difficult a business as it appears to one in one's youth.

A Good Lead in Parachutes.

Incidentally, it is to be regretted that the Air Council does not display the same intelligent interest in parachutes as was demonstrated by Elijah, for if it did so, all aeroplanes-of-war would be fitted with real life-saving parachutes, far superior to that used by Elijah, which was probably only the equivalent of those used by our people for the dropping of message-bags, and so forth. It is quite lamentable that, after all these centuries and after such an estimable example had been set, it should still be necessary to keep on agitating for the standardisation of a life-saving apparatus, which any ordinary person would regard as being as obviously necessary as a suit of clothes, and probably not as expensive as the R.A.F. blue suit.

A tithe of the energy which has been expended in designing and redesigning, and ordering and disordering, and issuing orders and cancelling orders, and generally messing about with the blue abomination, would have produced a perfectly good parachute, even if none had existed before the agitation began. As a matter of fact, at least one type of parachute is already fit to be adopted as a standard fitting, and one hopes that one of the next acts of the patron saint of aviators will be to inspire the technical heads of the Royal Air Force with sufficient sense to enable them to comprehend the benefits of carrying a guardian angel, as well as trusting in a patron saint. Heaven helps those who help themselves.

Absence of Mind and Body.

Of course the real trouble is that so few of the technical people who decide what is and what is not to be permitted to the active-service aviator know anything about active-service aviation themselves. They are so full of theory that their limited intelligence cannot grasp the practical value of being able to get out and walk when an aeroplane goes wrong.

Few of them perhaps will be able to appreciate the bitterly humorous remark of a hardened war pilot who, describing the death of a brother officer in a silly accident at home, said: "Poor old So-and-so went up alone, something went wrong with his machine, and he got into a spin from which he only emerged as an angel." They do not realise that, much as we all hope to aviate as angels some day, most of us who find ourselves in an uncontrollable or a damaged aeroplane would prefer to emerge from it by parachute rather than as an angel.

Therefore one commends the official intelligence (alleged) to the care of the patron saint of all good aviators, and one recommends these officials to study that little parachute effort of Elijah's, not to mention some thousands of others since then. It takes a long time for an idea to penetrate the official brain, especially the minor official brain, so perhaps if the convincing experiments of the past few months are not sufficiently seasoned to take effect, perhaps that of Elijah may be ancient enough to work on them.

The Desiderata of a Patron.

All of which is rather by the way. The point rather is that if Elijah cannot be considered as the patron saint of aviators, he is, at any rate, a splendid example. The argument against Elijah's claim is that so far as is known he only made one solitary flight, and that was for his own benefit. Moreover, there is nothing to show that he was actually the pilot of the fiery chariot. We know he was taken up in it, but as it was sent for him the assumption is that he was merely a passenger. Also it is said that Elijah was officially adopted as the patron saint of aviators by the Russian Orthodox Church and by Russian aviators, and obviously none in these days can wish to have anything to do with anyone who was in any way mixed up with Russians.

Furthermore, a well-known aviator has been heard to remark, during a debate on the subject of patron saints, that he didn't think much of Elijah because he was only "Old Testament," and that corresponded to the Wolff's Bureau of the period.

It seems obvious that the patron saint of all aviators should have superior qualifications. That is to say,

he should have had greater experience, and should have more in common with the active-service aviator of to-day, who risks or gives his life cheerfully for the sake of others.

Saint Michael the Archangel.

On such reasoning there is no doubt that Saint Michael the Archangel is properly the patron saint of all active-service aviators. St. Michael has throughout the history of the Church been the star-turn fighting pilot of the Heavenly Hosts. He is undoubtedly what the French call "the ace of aces" of war pilots. He has flown for some æons of years, and has been fighting all the time, and he has always been victorious. To whom else, then, can the active-service aviator look for help as his patron saint?

Incidentally, it is curiously apposite that one of the most honourable and most ancient orders within the King's gift, that of St. Michael and St. George, has been bestowed fairly frequently on officers of the Royal Air Force who have done well in the King's Service. The conjunction seems singularly fitting, in that St. Michael, as already stated, is the leader of the fighting angels, and St. George of Cappadocia, the patron saint of England, was, while on earth, an army contractor. How the two came to be associated in founding the order which includes the G.C.M.G., the K.C.M.G., and the C.M.G. is not within one's knowledge, but one assumes that from time immemorial men of war and war profiteers have been more or less interdependent. As Mr. Kipling has written:—

> Who can doubt the secret hid under Cheops' pyramid
> Is that the contractor did Cheops out of several millions,
> And that Joseph's sudden rise, to Comptroller of Supplies,
> Was a fraud of monstrous size, worked on Pharaoh's swart civilians.

History, as one has remarked before, is the greatest plagiarist in all literature.

Also, incidentally, it has been reported that the British Army in Palestine has discovered the tomb of St. George of Cappadocia, our none too respectable if very appropriate national saint, but one has heard nothing of their having discovered Elijah's aerodrome. Which seems another rather nasty knock for Elijah.

However, reason as one may, there is no saint in the Calendar who is so eminently fitted to be the patron of aviators as is St. Michael the Archangel. And it is comforting to know that he has already been adopted as such by a number of our own people.

The Guild of St. Michael.

Some little time ago the Reverend Father Morgan, of St. Michael's Presbytery, at Ashford, Middlesex, founded an organisation known as "The Guild of St. Michael for Airmen." It is satisfactory to know that the membership of the Guild is increasing by leaps and bounds, and that Father Morgan has a stiff time enrolling new members and associates. Now His Eminence the Cardinal Archbishop of Westminster specifically invites all Catholic aviators from the British Isles and the Dominions, and from the U.S.A., to put themselves under the special protection of the great Archangel by joining the Guild.

Unfortunately, from the point of view of the mere heretic, membership of the Guild is confined to Catholic aviators. Catholics who are not aviators may join the Guild as associates, but the heretic is left out in the cold, until such time as he, in the nature of things, seeks a warmer climate. However, considering the enormous number of Irishmen and Colonials and Americans of Irish descent, besides members of the old English and Scottish Catholic aristocracy, who are serving in the Royal Air Force, doubtless they alone are enough to form a very powerful Guild.

An Anglican Opportunity.

Furthermore, there seems no reason why some energetic Anglican priest should not form another Guild of St. Michael for non-Catholic aviators, seeing that St. Michael is a saint in the Anglican Calendar also. The two Guilds could run in friendly competition, and competition is always good for trade, albeit bad for official bunglers.

One commends the idea to some of our sporting R.A.F. padres, and one offers them the pages of this paper in which to set forth their schemes, in friendly competition with Father Morgan. Neither Guild could "pinch" members from the other, so the only competition would be rivalry in well-doing.

Join Now.

Meantime the Guild of St. Michael for Catholic aviators being the only one which is a going concern, it is to be hoped that all good Catholics who read this paper—and there are a good many thousands of them—will join Father Morgan in making the Guild a great moral and spiritual force which will do much good work during the war, and will continue its beneficent influence after the war.

Letters to the Rev. A. N. Morgan, Ashford, Middlesex, will be answered as quickly as his reverence is able to do so. This month of September is particularly dedicated to St. Michael, and culminates with the Festival of St. Michael and All Angels; therefore it is peculiarly the right time to join the Guild.

A Matter of a Name.

There is one minor detail which might well be altered with advantage to the Guild. It is now called a "Guild for Airmen." In these days, by decree of the Air Ministry, a commissioned officer cannot be an "airman," that piece of *Daily Mailese* being applied only to N.C.Os. and men of the R.A.F. Thus, if the Guild sticks to the word, the impression may be given that officers are not eligible for membership. The phrase "Guild for Airmen" will be apt, ere long, to suggest an aerial equivalent of the Mission to Seamen, or Mr. Havelock Wilson's Seamen's and Firemen's Union.

Therefore, it might be well to call it a Guild for Aviators; then it would be open to officers and airmen who are pilots or observers to join as members, and for other officers and airmen to join as associates. The mere word may seem unimportant, but one hopes to see St. Michael burdened with the care of many aviators, and it would be a pity to cramp his style for the sake of a single word while the Guild is still young.

One wishes the Guild every success. Father Morgan seems to be pre-eminently fitted to run it, for, judging by his writing in "Saint Michael's Magazine," which is in process of being changed from a parish magazine to a Guild magazine, he has that exuberant sense of humour which is part and parcel of the make-up of every successful aviator, and so the members and associates of the Guild will find in him one of themselves in heart and spirit, albeit prevented by *force majeur* from being with them in body.

Being oneself merely a friendly neutral with ritualistic tendencies, one is not eligible to become even an associate of the Guild, but one hopes to hear ere long that many readers of this paper are in communication with Father Morgan and have become members or associates of this excellent organisation, which, one feels sure, will afford them much entertainment and amusement when all is going well with them and much solace in time of trouble.—C. G. G.

R.A.F. FASHION NOTES.

Young officers of the Royal Air Force should pay the greatest attention to that rule of deportment, decreed alike by the Air Council and by the Army Council, that officers should not walk arm-in-arm in public with persons of either sex The rule shows a kindly sense of the responsibility of the High Authorities to the æsthetic feeling of the general public. Nothing looks worse than intertwined arms of the wrong colours, and, as it is impossible to rely on the colour-matching ability of young officers—even after passing a Medical Board—the only thing to do is to forbid the practice altogether. Imagine the shock to the nerves of any artistic person on meeting what appears to be a Siamese twin, one-half of which is in a true khaki and the other half is in that *nouveau* art shade beloved of the Air Ministry, which has now become popularly known as Bolo Blue.

A clever young friend of mine, who is notable for his ability in getting into and out of tight corners, suggests that the proper solution of the difficulty of the R.A.F. uniform is to make it the compulsory wear of all the officials at the Hotel Bolo. The Bolo Blue would *sans doute* preserve its pristine *delicatesse* of *nuance* if only worn in the cloistered shades of that fashionable erstwhile *caravanserai*. Thus the wearing of Bolo Blue would distinguish quite clearly between the real brain-merchants who win the war from their seats in that luxurious palace and the mere war aviators who just kill Huns and drop bombs, and do messy jobs like that instead of wearing out their brains, and their other extremity, on an office chair.

The idea is distinctly worth the attention of the High Authorities, for, now that the wearing of chevrons is no longer permitted, surely we must have some way of distinguishing between the man whose brains have kept him out of the war and the man whose fondness for fighting has put him in the thick of it. Rude people might say that Bolo Blue indicated the blue funk of its wearer at the remote chance of having to go on active service, but the *intelligentsia* would soon recognise in the wearer of the blue uniform a brain and a brother. This distinction would certainly assist the enforcing of the regulation about walking arm-in-arm, for no true Bolo Boy-Blue would think of sullying the fair fame of his intellect, still less the fair surface of his blue uniform, by contact with an oil-stained gore-spattered war-aviator.

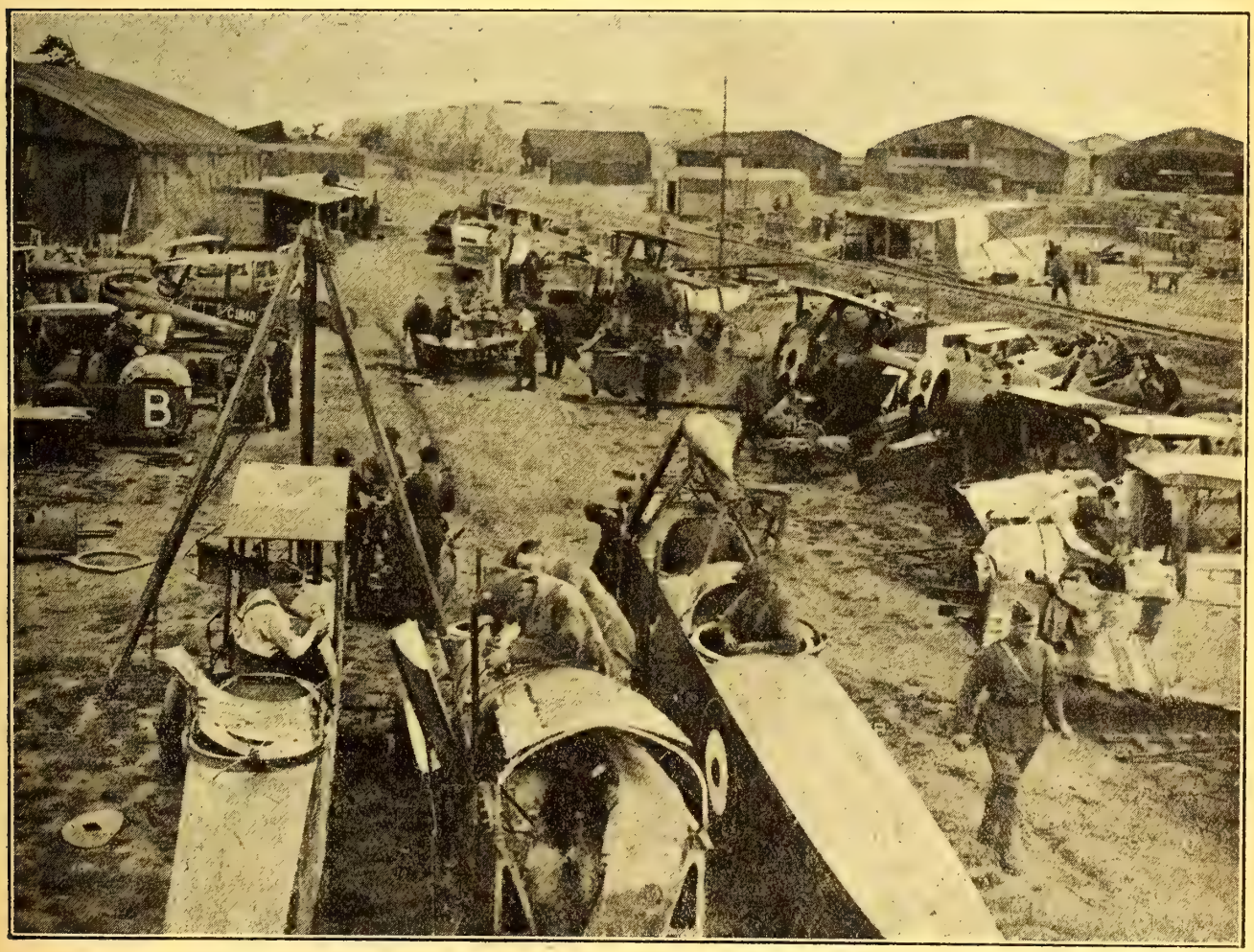
Even without walking arm-in-arm, wearers of Bolo Blue should be very careful about choosing their companions of either sex, for merely walking or standing alongside the wrong colour produces an unfavourable impression of the wearer among those who realise how much more important correctness of deportment is than just winning this nasty war, which is interfering so much with Art and the other really vital things of life. For example, I noticed in Piccadilly the other day a Kaffish officer in Bolo Blue walking with a complete bird in that fashionable shade of cochineal pink, which is so much worn by those fair ones who are outside the best society. The effect of the combination—that is to say, the outer garments of the pair—was enough to give any pilot permanent astigmatism in conjunction with a chronic concealed squint. Looking at the chaste façade of Prince's afterwards I saw the same two figures imaged on the wall with the colouring reversed in the matter of those red and blue Pears' Soap advertisement of the past.

Dining at one of those exclusive little restaurants in the Rue Grecque, Soho, recently, I noticed another officer in Bolo Blue commit an unpardonable social solecism. This young gentleman (temp.) was dining with a bird dressed in vivid green—at least so much of it was visible above the table—which dress in itself clashed astonishingly with the Bolo Blue when seen under the table. After the sumptuous repast set before them by that famous chef, Signor Gnocchi, they regaled themselves on fruit—fruit in wartime and in the autumn, I ask you—he munching plums, that comestible so necessary for our gallant lads in France in conjunction with apples, and she delicately sucking an orange. The conjunction of plum-purple, orange, green, and Bolo Blue fairly shrieked. Even the most most outrageous Futurist could not have done anything worse. But retribution was at hand. He dropped a plum in the lap of his slacks, and in trying to save it upset a cup of coffee over it, which would not have mattered a bit on khaki, but on Bolo Blue—Ugh!—C. G. G.

GENERAL PERSHING'S MESSAGE.

General Pershing has written to the Chief of the American Air Service :—

"The Commander-in-Chief has learned with great satisfaction of the excellent work of the first pursuit group of the Air Service, and desires to commend it especially for its praiseworthy record. The handicaps under which this initial pursuit unit has been organised and begun to discharge its duty are well known and recognised. With fine spirit and determination it has already achieved an enviable record."



Official Photograph.

At an Aircraft Supply Depot in France, where machines damaged on active service are rebuilt..

ANOTHER AIR INQUIRY.

The Secretary of State for the Royal Air Force has appointed a Departmental Committee, under the chairmanship of Mr. Cosmo Bonsor, to carry out a detailed inquiry into the establishments of the Air Ministry in order to establish how far the staff is adequate or otherwise for the work to be done, and with particular reference to the question of the possible release of officers of high medical category for service in the field.

THE AIR MINISTRY AND LABOUR.

The "Times" of Sept. 6th gives the following account of the first meeting of the Trade Union Congress held on Sept. 5th :—

The first hour of the morning session was spent in a discussion on the development of industrial organisations.

The resolution began with a preamble reciting that having regard to the vital importance of united action for securing the restoration of trade union conditions after the war, a higher standard of life for all workers, and an effective contol by the workers over the conditions of employment, the Congress welcomed the growing tendency towards union by industry as an improvement on sectional unionism or union by crafts alone.

The resolution went on to suggest that the organisation of an industrial union should allow for the maintenance within the union of each distinct craft combination, and for the possibility of federating such combinations with like bodies outside the union, for specific purposes; and that every craft union and general labour union should allow for sectional combinations within the union, on industrial, or occupational lines, so as to facilitate inter-union federations, and, if circumstances require, the transfer of a section to any more appropriate union. Finally, the resolution proposed that a committee should be appointed of six members of the Congress and six appointed by the Parliamentary Committee, to prepare a scheme for fixing the various industries and the lines of demarcation between them, and to make suggestions for the unification of the forces in each industry.

For the resolution 2,162,000 votes; and 1,955,000 against.

Mr. C. W. BOWERMAN, M.P., Secretary of the Parliamentary Committee, announced that on Monday night telegrams embodying the message of the Congress to the Forces were dispatched to Sir Douglas Haig, Admiral Beatty, and the Chief of the Air Force.

The following reply was received from Lord Weir :—

"On behalf of the Royal Air Force I desire to send to the jubilee meeting of the British Trade Union Congress most hearty thanks for your message of congratulation. Relying on the continued zealous help of the workers, without which it cannot act, the Royal Air Force confidently anticipate even greater success in the battle against German militarism."

The reading of the telegram was received with cheers.

W.R.A.F. CHANGES.

Mrs. Gwynne-Vaughan, C.B.E., D.Sc., Chief Controller of Queen Mary's Army Auxiliary Corps, Overseas, has been appointed Commandant of the Women's Royal Air Force in succession to the Hon. Violet Douglas-Pennant.

Mrs. Gwynne-Vaughan was a Professor at King's College before her appointment, and is one of the few women engaged on important war work whose pre-war occupation is being kept open for her by a man.

Miss Douglas-Pennant, whom she succeeds, was, before her appointment to the W.R.A.F., an Insurance Commissioner for Wales. She in turn had succeeded Lady Gertrude Crawford, who was the first commandant of the Women's Royal Air Force.

About a month ago Mr. Tyson Wilson put questions in the House of Commons concerning the reasons for the appointment of Miss Douglas-Pennant as commandant, and as to alleged dissatisfaction in the Women's Royal Air Force, Maj. Baird replied :—Two senior officers of the W.R.A.F. have resigned since the appointment of the present commandant. The Air Council have every confidence in this lady's ability and discretion, and they see no need for an inquiry of the nature suggested.

THE W.R.A.F. WRANGLE.

From the "Daily Chronicle" of Sept. 10th :—

We understand that the Hon. Violet Douglas-Pennant, who has been summarily dismissed by the Air Council from the post of Commandant of the W.R.A.F., is not resuming her position as one of the National Health Insurance Commissioners of Wales until after an inquiry has been held.

In view of the confidence expressed in her by Major Baird, Paliamentary Secretary of the Air Council, in the House of Commons on Aug. 7th, it will be interesting to know the reasons for this somewhat abrupt dismissal.

The Hon. Miss Douglas-Pennant complains that she was summarily dismissed from the Air Board without any notice or without any explanation. She was informed that she was unpopular with the staff, but the staff immediately showed their appreciation by making a presentation to her.

THE FRENCH AERIAL MAIL.

It is announced that the aerial postal service between Paris and St. Nazaire is being continued.

[The aerial postal service in Great Britain has not yet begun. We do not prepare either for war or peace till the cataclysm arrives.—Ed.]

AN ARMY ORDER.

The following Army Order was issued on Sept. 5th :—

Army officers, non-commissioned officers, and men are forbidden to take passenger flights in aircraft belonging to the Royal Air Force, except on duty, and with the written consent of their Commanding Officer, stating the nature of the duty to be performed.

It is announced that for Royal Air Force purposes the United Kingdom is divided into areas with headquarters as follows :—

North-Western Area.—All counties in Scotland. H.Q., Adelphi Hotel, Glasgow.

North-Eastern.—Westmorland, Cumberland, Northumberland, Durham, Yorkshire, and those portions of Nottinghamshire and Lincolnshire north of the line Worksop—Lincoln (exclusive)—Horncastle—Ingoldmells H.Q. Racecourse Buildings, York.

Midland.—Nottinghamshire and Lincolnshire (except as above), Leicestershire, Rutland, Northamptonshire, Huntingdonshire, Bedfordshire, Cambridgeshire, Norfolk, Suffolk, Lancashire, Cheshire, Derbyshire, Staffordshire, Warwickshire, Worcestershire, Shropshire, Herefordshire, and the counties of Wales with the exception of Glamorganshire. H.Q., Somerset House, Leamington.

South-Western.—Glamorganshire, Monmouthshire, Gloucestershire, Wiltshire, Hampshire, Dorsetshire, Somerset, Devonshire, Cornwall, and Scilly Isles. H.Q., Chafyn Grove, Salisbury.

South-Eastern.—Essex, Hertfordshire, Middlesex, London, Kent, Surrey, Sussex, Berkshire, Oxfordshire, and Buckinghamshire. H.Q., Covent Garden Hotel, London, W.C.2.

Ireland (Group).—All counties in Ireland. H.Q., 9, Merrion Square, Dublin.

Each area is commanded by a General Officer of the Royal Air Force, who is responsible for everything in connection with the Royal Air Force within his area.

If an Army officer wishes to visit any Royal Air Force unit he should make application through the usual channels to the General Officer Commanding the area concerned.

In future officers, warrant officers, non-commissioned officers, and men who have been awarded the Albert Medal will be entitled to add the distinctive letters "A.M." after their names, and in all documents, registers, reports, correspondence, etc., the descriptions should include these particulars. Lists of officers and warrant officers who are entitled to use the letters "A.M." are to be supplied to the War Office for the purposes of the Army List.

HONOUR FOR THE LATE MAJOR McCUDDEN.

The Mayor of Gillingham, Kent, Alderman W. H. Griffin, at a meeting in the Council Chamber on Sept. 4th, presented Mrs. McCudden, the mother of the late Major McCudden, with an illuminated certificate of the freedom of the borough of Gillingham, which could not be personally conferred upon her son, Major James Byford McCudden, V.C., D.S.O., M.C., M.M., who was accidentally killed in France on July 9th.

The certificate was enclosed in a silver casket, which bore the borough arms of Gillingham and the arms of the Royal Flying Corps, together with the following inscription :—

"Presented to Captain James Byford McCudden, a native of Gillingham, in recognition of the great services rendered by him to his country and as a mark of appreciation of his fellow-townsmen of his bravery in the face of the enemy."

Both the Mayor and Mr. G. F. Hohler, K.C., M.P., paid tributes to the daring deeds and heroism of the aviator. Accompanying the certificate of freedom was a bundle of War Bonds and Treasury notes, value £114, the gifts of the townspeople of Gillingham. Mrs. McCudden made a short speech in acknowledgment, and presented the Town Council with a framed portrait of her son in uniform.

All Mrs. McCudden's sons belonged to the Air Service. Three lost their lives while flying, and the fourth, a youth in his teens, in the uniform of the Royal Air Force, was with her on the occasion of this presentation.

MORE AIR MINISTRY BUILDINGS.

A portion of Adelphi Terrace, the row of Adam Buildings just west of the Hotel Cecil is to be turned into offices as an extension of the Air Ministry. For the moment, however, the Savage Club and many other places in the famous terrace are safe, as the intentions of the Office of Works are to turn into Air Ministry offices only those rooms which have lately been used as billets for the Ministry.

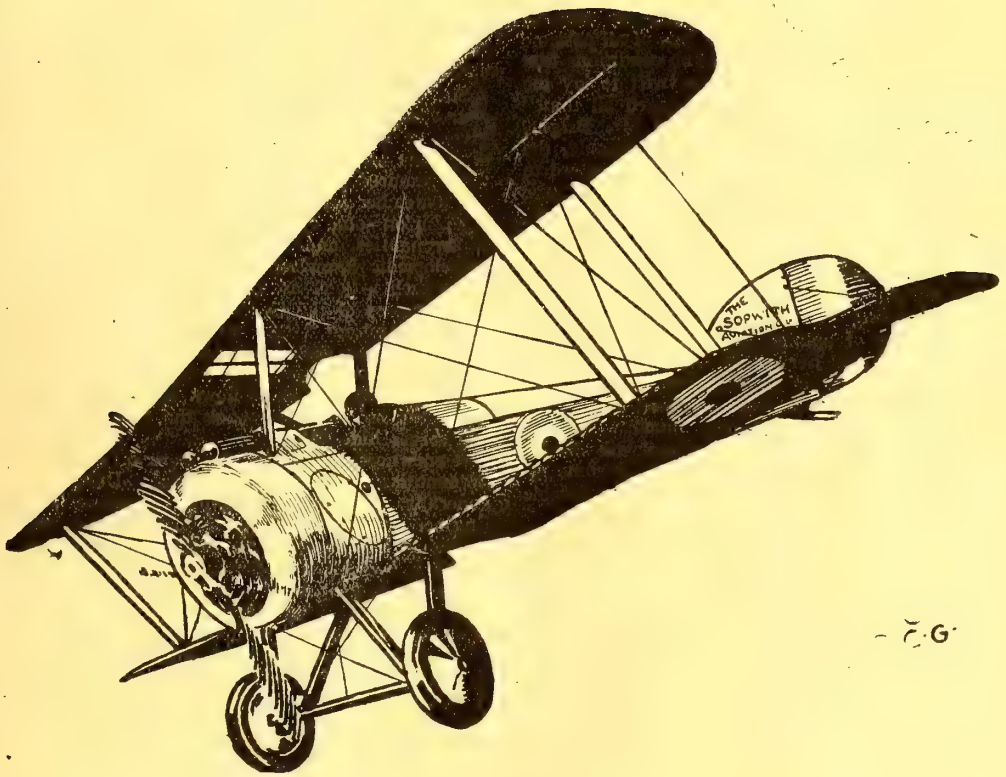
[It will be rather hard to find a good name for the latest Bolo Annexe. Has anybody a good suggestion? Bolshevik Mansions, Soviet Chambers, Trotsky Rents, and Hindenburg House are already allotted to various outlying departments.—Ed.]

FOR KEEN YOUNGSTERS.

Mr. E. J. Wignall, registrar of East London College, Mile End Road, E., wrote :—

"I would ask your readers whose sons are disappointed at finding they are too young by about six months to be accepted as cadets in the R.A.F. to apply to me for a copy of an address delivered by Brig.-Gen. J. G. Hearson on the training of air pilots, and also for particulars of the special preliminary course in aeronautics, science, and engineering which has been instituted by the Council of this College after the consultation with officials of the Air Force."

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BOOKS TO READ.

"Telegraphy, Aeronautics, and War."

Like all Gaul, Mr. Charles Bright's new book "Telegraphy, Aeronautics, and War" (Constable, 16s. net) is divided into three parts, which are sufficiently indicated by its title.

The backbone of the book, its *raison d'être,* in fact, is the section which deals with telegraphy, more especially in its imperial aspects. The distinguished son of a distinguished father (who was knighted at the age of 26 for having been the engineer of the first Atlantic cable) Mr. Bright avails himself fully of a certain reputation for plain dealing and speaking which he has won in the course of a lifetime of disinterested public service.

Especially is this manifest in the latter part of the book, in which are set out numerous addresses delivered by the author in his own neighbourhood during the early days of the war. I should think that Mr. Bright's fine rolling periods were eminently calculated to penetrate the cranial structure of the recalcitrant Hodge, and one would be inclined to recommend him as an emissary—say to Coventry.

Possibly it is as a member of the Royal Flying Corps Committee of 1916 that Mr. Bright is best known to readers of The Aeroplane, and it is with this aspect of his book that we are more directly concerned.

Inevitably, with the lapse of time, many of these recommendations have been deprived of much of their original force and potency; but as the British public is apt to think with the adorable Doctor Pangloss that "all is for the best in this best of all possible worlds" it is as well that we should remember the conditions that obtained but a few short years ago, nor be too swift to lay the flattering unction to our souls that "we have changed all that."

That much has been changed indeed we owe to Mr. Bright, and a few other men of a like temper. Take, for example, the attitude of the First Lord of the Admiralty in 1907 with regard to the representatives of the Wright Brothers, who were over here to urge the adoption of the aeronautical patents of those two great pioneers:—

"I have consulted with my expert advisers with regard to your suggestion as to the employment of aeroplanes, and I regret to have to tell you, after the careful consideration of my Board, that the Admiralty, whilst thanking you for so kindly bringing the proposals to their notice, are of opinion that they would not be of any practical use to the Naval Service."

There you have official complacency in its fullest, finest flower—the bland, polite, maddening indifference against which this paper has broken many a lance. And though much water has flowed under the bridges since then, and the inelastic official mind has been brought by the duress of war to see (in some instances) the obvious, there remains none the less a considerable scope for the activities of such men as Mr Bright.

A practical outlook is revealed by the recommendations which he made in the Air Enquiry Committee Final Report. These include constructive suggestions in connection with the essential extensive development of the air service; notes on standardisation; and on the encouragement of inventions, the latter including a call for an officially aided laboratory here, akin to that organised by M. Eiffel in Paris.

Mr. Bright (one had almost written "Britling"—they have much in common) has always advocated that the fullest use should be made of suggestions, the outcome of practical experience, emanating from service pilots. It may be noted, too, that he was whole-heartedly in favour of the unification of the services at a time when that seemed as remote as the Golden Age.

[The sole point on which one disagrees with Mr. Bright.—Ed.]

Those who do not happen to find themselves in sympathy with Imperialist views may be tempted to think, after perusal of the telegraphic section, that Mr. Bright is a species of electrical Hot-Gospeller! It is true that he manifests something of the obsession, shown by your true enthusiast, but in these days of diffuse and slap-dash writing, is not this something of a virtue? A man is always interesting when talking of his own "shop," witness this little account of the telegraphist's part in sinking "Emden":—

"The guns of the 'Sydney' sent the 'Emden' on to the rocks, but those guns would not have come into play had not the telegraphist at Cocos quickly recognised the enemy in all her disguise. (Concertina funnels after the model of the destroyer in 'Their Lawful Occasions') . . . and despatched the warning message throughout the world, which brought the 'Sydney' up in time. The men who performed these unostentatious miracles—and upon whom, in the last analysis, the linking up of our scattered ships as well as of our scattered Empire depends—are not known to the great public. On desolate little islands, in remote alien cities, they lead the loneliest of lives. For conversation they must talk across the wires to colleagues, possibly equally lonely, a thousand miles away. They know as soon as kings and ministers what is happening in the great world from which they are exiles, but they have to keep the charge with an honour as strict as their devotion."

On occasion the author abandons a normally impeccable style, and one notes his suggestion, culled from Heaven knows where, as to the origin of the war:

"Another Old Lady" goes on to say: "It cannot be denied that indecent dress has been a feature of periods of great trouble in nations. Look at the awful styles worn by women in the time of the French Revolution. During the great wars in which this country was engaged in the first years of the last century our women wore almost exactly the same fashions as to-day, as the pictures of the period show. And it is a very strange thing to me that the present war broke out at the time when short, tight skirts came in. It is a sign which I do not see how we can disregard."

I do not suppose that aspect of the affair had occurred to you?

Taken in its entirety the volume constitutes a record of the work of a fearless and able pioneer in his country's interest, and as such is to be unhesitatingly recommended.—R. H. B.

The Flying Book.

If this review should appear distraite, let me plead in advance my extenuations—the scent of the garden wreathing in through the open French window, the soporific drone of the bees, and a glimpse of the Downs in shimmering sunlight, seen through a gap in the privet hedge, far to the South.

But the changing note of an aeroplane, speeding high overhead on its lawful occasions comes as a reproof directed against the indulgence that counsels me to doze in broad daylight. Now it hardens, and now dies away again, and the things that are in the little book in front of me concern it directly. In an older volume, by a man long since dead, there is a little phrase in which he describes the home of his youth—half lost in the mists of memory, "*Parva sed apta,*" which would well become this newcomer, straight from the press.

Small it is—handy enough to warrant always keeping it at your elbow. "The Flying Book" (and what would we not have given for a peep at it but ten short years ago) sets out the data of the art in a way that you would not think possible in a scant three hundred pages.

I remember meeting its editor, Mr. W. L. Wade, and consulting him on some minor point having to do with the early history of aeronautics, and at the time I was struck with his terrifying encyclopædic knowledge; knowledge which well befits him to write such a book as this. We chatted, I remember, about the performances of the Cedric Lee machine, known to admirers as "The Doughnut," and her blithesome way of decanting her pilots, and committing a headlong series of unpremeditated loops. From that we ranged and roved over all the other treacherous birds that had hopped or flown precariously in those early times, and I can see from this book that the writer's dry-plate memory still serves him well.

It embraces resumés of the work of Aeroplanes in War, Naval Aeronautics, Commercial Flying, Design and Construction generally, a practical chapter on control, articles on Aero Engines, Airships, War Aeroplanes, a Historical Section, Records, an Industrial Directory, an article on the genesis and development of the R.A.F., lists of honours awarded to that service (these of a notable length) a table of air-raids (in case they had slipped your memory!) a glossary of terms—in fine it is stuffed with information otherwise difficult of access

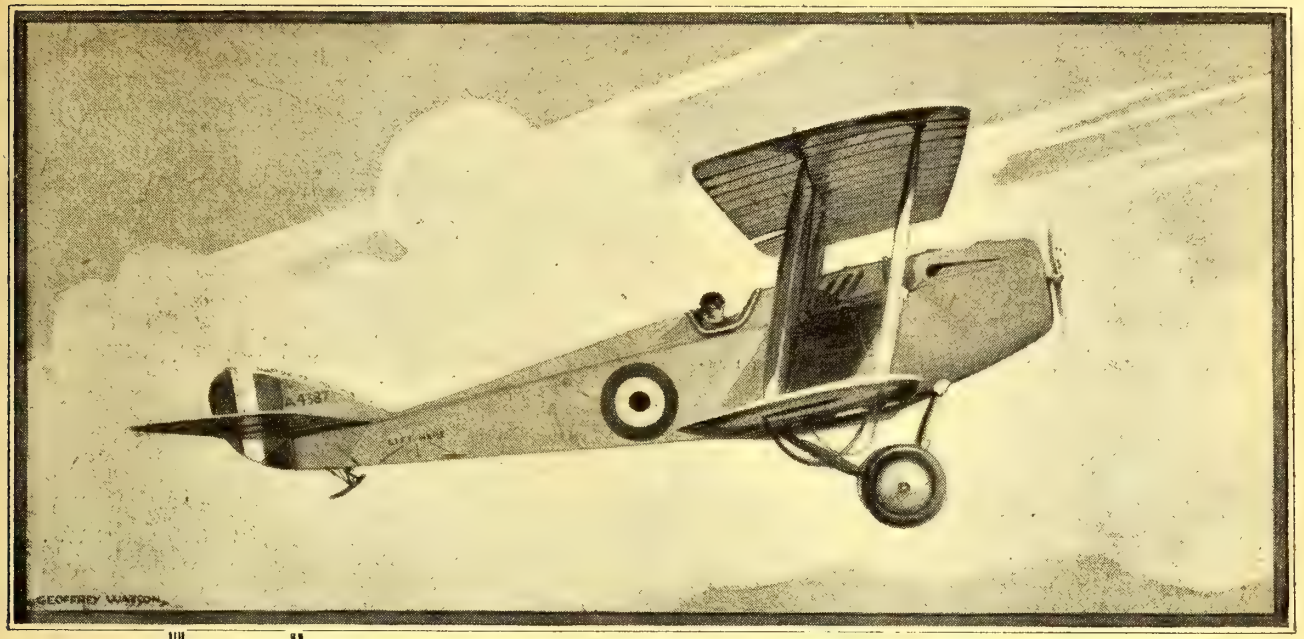
In compendia of this kind conciseness is usually obtained only at the expense of accuracy and adequacy, and it is to the credit of the compiler that this does not obtain in the present instance. The section dealing with war aeroplanes (though of necessity limited; the enemy, ill-served as he is by his secret service, might learn so much from a silhouette the size of your finger!) merits special commendation (though one wonders why that quaintest of flying-fish, the Gallaudet, should appear in this galley, from what we know of its career it would not hurt a fly) and the same may be said with regard to that portion of the book which deals with historical machines. The descriptions which foot the silhouettes are, in their way, models of succinctness.

Aero-engines are adequately covered, from that friend of our youth, the 30-35-h.p. radial Anzani by route of the 200-h.p. Salmson (which, with its bristling battery of cylinders, always reminded me of a particularly infuriated spider) to the stark, adequate-looking Hispano, which the French phrase "*fausse maigre*" seems to befit. (Not a "false thin one"—but one who, seemingly frail, is quite the other way!)

Personalia are always interesting, and from the "Who's Who" section you may learn how such a one, with degrees which straggle after his name half across a printed page, became famous; and how another with nothing but his mother-wit to aid him, became famous too.

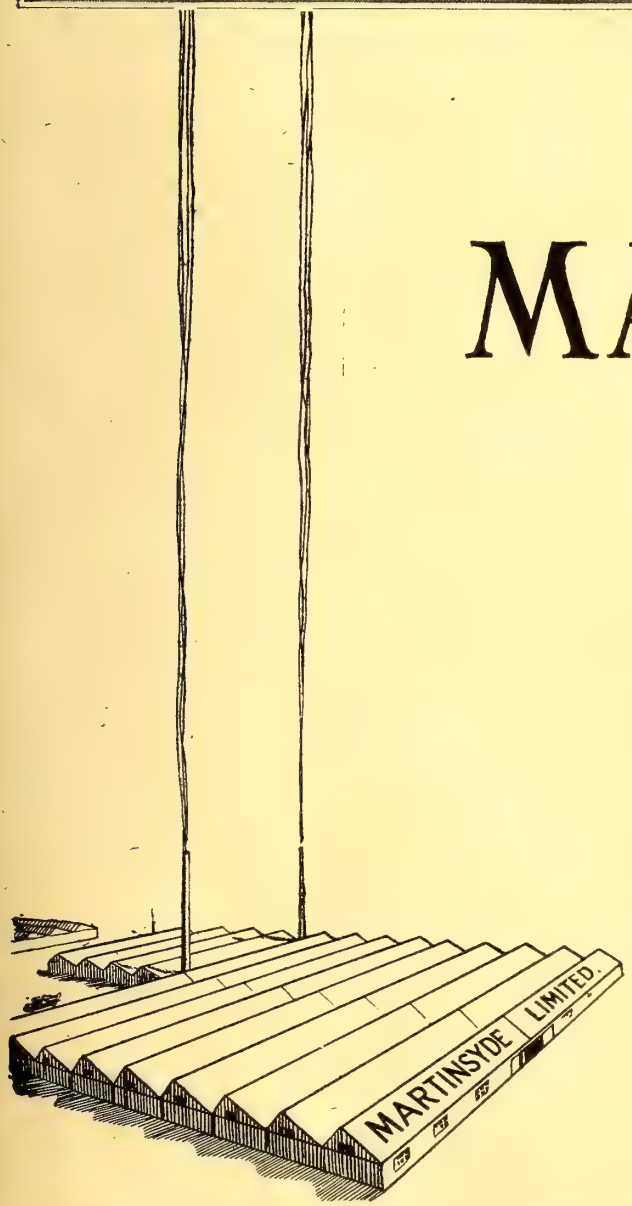
The mounting figures of the records tell their own story, though probably there are few of them but have been over-passed in this war, and no man the wiser. The chapter on commercial aeronautics has been made interesting and constructive, and even the homely kite-balloon has its little place of mention. Considering its enforced brevity, the note on design and construction is surprisingly informative.

And if, acting on this counsel, you should lay down your crown-piece for the book, I think you will agree with me that no definition could fit it better than the little phrase into which Du Maurier breathed his memories of that home of long ago—"*Parva sed apta*"—"Small, but all-sufficing."—R. H. B.





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"Married Love."

" Nothing is better, I well know,
Than love; no amber in cold sea
Or gathered berries under snow:
That is well seen of her and me."

—Swinburne.

Since time first began lovers have been seeking how best to keep inviolate the charm that binds them, and yet too often the rosemary has turned to bitter rue. And for all the countless books that have been written on the matter, we are in no better case to-day, so that the disillusionment of marriage, its bitterness and the heartache of it is the stale butt of the music-hall, and a commonplace accepted. Yet the "Personal" columns of this paper show week by week that many of the Royal Air Force believe that they know "how to be happy though married." How many of them have, in good truth, any idea of the problems before them?

So often the books that purport to guide and help are merely counsels of perfection, polished stones for bread. Their sincerity may have been real, but their tinsel generalities were useless. I have read many such. Latterly, some more courageous souls have dealt with the physiological factors, the antipathy and disaccord of the flesh that so often lies at the root of the matter, and of these, I think, none has been more truly helpful, more delicate in probing the wound, than Dr. Marie Stopes.

There will be some, of course, who will see in such a book as "Married Love" nothing but matter for horse-laughter and a boorish jest or two; but the decent folk will be glad of it, and many a wracking doubt and unspoken grief may be dissolved by the writer's deep sympathy and understanding.

I remember other writers in this field, harshly minatory, who would have us all wear the rasping hair-shirt of impossible and useless deprivations.

Dr. Stopes is too human and too much of a woman to speak in this fashion; she rather hopes, with another woman who had felt and suffered, that—"sexual love—that tired angel who through the ages has presided over the march of humanity, with distraught eyes, and feather shafts broken, and wings drabbled in the mires of lust and greed, and golden locks caked over with the dust of injustice and oppression—till those looking at him have sometimes cried out in terror, 'He is the Evil and not the Good of Life!' and have sought to exterminate him—shall yet, at last, bathed from the mire and dust of ages . . . leap upwards, with white wings spread, resplendent in the sunshine of a distant future—the essentially Good and Beautiful of human existence."

I would not have you think, though, that the writer paints an inaccessible Elysium; she is above all things practical, and looking to the moment. To any who now, in this hour, are ridden by doubt and dissension, whether married or hoping to be, she has a message, and a constructive, workable plan.

It has been well said that "there is gold and clay, sunlight and savagery, in every love-story," and many a knot, seemingly past all unravelling, might be smoothed away, and happily forgotten by the following of such counsel as is given here.

The essential facts of life are now more widely known than ever before, but it is questionable if they are better known. And, though we cannot think of a bird multiplying by fission, or an elephant giving off a bud, where most the matter comes home to us, in our daily lives, in our homes, there is an unreasoned shrinking, an antipathy to "sex" (now in itself almost an opprobrious word) that has digged many a pit to our undoing.

After all, as Professor Geddes has said:—"Love is a spring of conduct which has prompted much of the heroism and hard work of the world. If we spoil it, or make little of it, we lose one of the greatest possibilities of happiness. If we degrade it, one of the lights of life, a very 'candle' of the Lord,' goes flickering, guttering out."

It would be difficult, and, indeed, it would not be fair—to try and give any indication here of Dr. Stopes' tempting byways to happiness. Part of her book may, indeed, be summed up in Balzac's little known aphorism:—"*Un homme ne doit jamais se permettre un plaisir qu'il n'a pas eu le talent de faire desirer.*"

But for the more actual, and, so to speak, pathological part of her guidance, it would be better to read the book itself. I know you are an Anglo-Saxon, but none will see you buying it, so you need not be ashamed of having a heart, or even of being romantic, as I here sturdily confess that *I* am! And where would the glory and light of life be else?

Buy it, then, and, after reading, hand it to the wife, or to the little wife to be, remembering always that:—"Sex is the physical condition of the finest possession we have; it offers opportunities by which we can build nobility into our lives. Our age is a difficult time of transition, but we cannot believe that men are going to drift away from the honouring of women, or from being able to love them out of a pure heart fervently. To serve an apprenticeship towards this chivalrous honour and controlled love of women is a great opportunity, and those who use it aright will by no means lose their reward. We do well to remember Comte's fine saying:—'Between two things so complex and diverse as man and woman, the whole of life is not too long for them to know one another well and to learn to love one another worthily.'"

This book is published by A. C. Fifield at five shillings.—R. H. B.

"Liquid Fuels."

And I had almost forgotten it, too, that long, low room, flanked by benches stained and be-dropped by chemicals, the gleaming, orderly rows of test-tubes in racks, the high-lights on the bulging retorts, the fascinating carboys of forbidden acids, the delicate weighing machines under glass, the leaping, ghostly flame of the Bunsen burner, livid blue in the sunlight, and the acrid smell of chlorine gas over all.

"Stinks" was the disrespectful name that the Literary Side applied to our devastating researches in the laboratory, but that was only their jealous rage. Not for them the stench of burning sulphur, the experiment depositing of copper on one's penknife blade with the aid of ultramarine blue sulphite, of which possession had been privily obtained. Not for them endlessly to analyse a harmless-looking white powder throughout an entire term, only to discover at the end (about exam. time) that it was chalk!

He who taught us was an unkempt and earnest man, who berated us for the good of our souls. I forget his real name, but we called him "Tishoo," for he had a perpetual cold. In disclosing this, I do but take my just revenge, for his invariable form of address to me was "Wretched little boy!" I fear I helped to bleach that good man's hair. Eheu fugaces . . . . labuntur anni! The fleeting years *do* slip away!

You will forgive my prosing, will you not? remembering Kipling, "Smells are surer than sights or sounds to make your heart-strings crack"—there was one malachite-green powder in particular, you sneaked a little—oh, just such a little bit of it, and lit it, and the result would make a skunk blush at his utter inadequacy. . . .

It was the word "calorimeter" that brought it all back, here on the open page of Mr. H. Moore's "Liquid Fuels for Internal Combustion Engines" (Crosby, Lockwood, 7s. 6d.). Let me say at the outset that this book forms an indispensable part of the armoury of the advanced technician. Its sub-title, "A Practical Treatise for Engineers and Chemists," does not bewray it, and aside from the admirably collated data, the speculative side of the book is vividly interesting to those who are concerned with the study of oil fuels, and should act as a stimulus to experimental work in this field.

Modestly enough, the author claims no more than the compilation of an introductory to a specialised subject, which is somewhat to understate the case. The field covered is very wide, ranging as it does from a close-knit exposition of the occurrence, origin, and chemical nature of petroleum, to an illuminating chapter on the calculation of calorific power.

Those who are interested will find that it deals adequately in turn with shale oil and its products, coal tars and their derivatives, lignite tars and their products, animal and vegetable oils, and the alcohols, methyl and ethyl. A thoughtful commentary on the carbonisation of wood and peat is particularly interesting at the present juncture, as owing to the presence of large deposits of peat in the British Isles, a great deal of experimental work, both in the laboratory and on a commercial scale, is being carried out, in the hope that these deposits may be exploited in the near future. At the present time the fuel produced from peat is of low density and calorific power, but it is hoped that these disadvantages may be overcome, and there is no doubt that the distillation of peat tar would prove suitable for internal combustion engine use.

The author touches on exhaustive experiments conducted by him in connection with the employment of benzol and alcohol for four-cycle engines, into which he enters to some extent, but I note that as yet he has not been able to suggest any means by which the difficulties of pre-ignition, inseparable up to the present from these fuels, can be overcome. He is uncertain as to the availability of benzole as a fuel after the war, but gives it as his opinion that undoubtedly a great wastage of by-products has been prevented by Government measures.

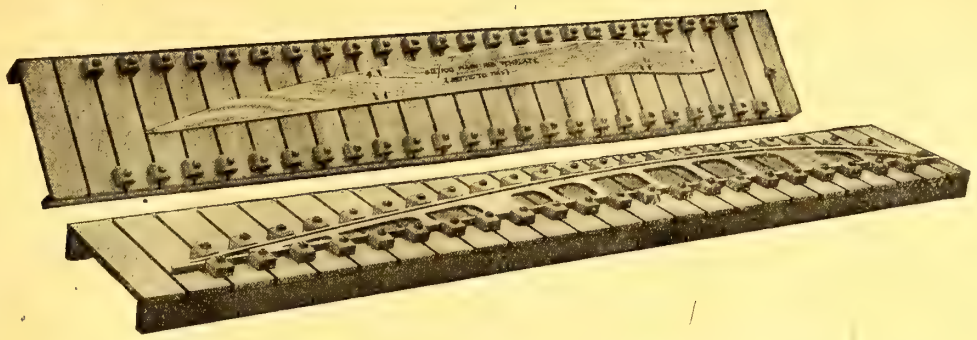
On toluene, the first hydrocarbon of benzene, the writer touches occasionally. Its relation to benzene has been a matter of some interest to experimenters, and I find on looking the matter up that this hydrocarbon was first obtained by the dry distillation of dragon's blood in the year 1841 by a couple of French experimenters. Appropriately enough, they termed the product dracyl, little dreaming the importance it would assume in later years.

One can imagine a plaintive dragon regarding the alembic in which the scientists had imprisoned a little essence of dracyl, and saying, "Alas, my poor brother!"

But this by the way. None shall be found so frivolous as to liken this book to what one of the popular Sunday newspapers, in an inspired moment, called "the pontificial dicta of the eclectic dilettani"; it is rather the ripe product of research as painstaking as it was unremitting, and we hope that where Mr. Moore has blazed the trail others will follow, so that British-produced fuel may be an actuality within our time.—R. H. B.

[Any of these books can be obtained from The Aeroplane and General Publishing Co., Ltd., 2, Breams Buildings, E.C.4.]

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FROM THE "LONDON GAZETTE."

AIR MINISTRY, Sept. 3rd.

R.A.F.—The following temp. appts. are made at the Air Ministry :—

Staff Officer, 1st Cl.—(Air.)—Maj. (temp. Lt.-Col.) G. P. Grenfell, D.S.O., and to retain his temp rank while so empld., Aug. 17th.

Staff Officers, 2nd Cl.—(Air.)—And to be temp. Majs. while so empld., if not already holding that rank :—Capt. C. L. Bullock, Capt. A. G. Clarke, Capt. (temp. Maj.) Hon. L. G. W. Guest, Capt. P. N. Logan, Aug. 17th.

Staff Officers, 3rd Cl.—(Air.)—And to be temp. Capts while so empld., if not already holding that rank :—Capt. (temp. Maj.) E. Childers, D.S.C., Lt. W. S. de Ropp, Lt. W. G. E. Hayman, Lt. (temp. Capt.) L. S. Kiggell, Lt. G. H. Lyall, Lt. (temp. Capt.) H. McClelland, D.S.C., Lt. (Hon. Capt.) G. M. Part, Lt. (temp. Capt.) H. Spink, Aug. 17th.

The following temp. appts. are made :—

Staff Officers, 1st Cl.—(T.)—Capt. (temp. Maj.) R. K. Pillers, and to be temp. Lt.-Col. while so empld., May 17th; Lt.-Col. C. Bovill, July 8th.

Staff Officers, 2nd Cl..—Capt. (Hon. Maj.) R. H. Howell, and to be temp. Maj. while so empld., April 1st; Maj. J. F. Dyer, June 8th.

Staff Officers, 3rd Cl.—And to be temp. Capts. while so empld., if not already holding that rank :—Lt. (Hon. Capt.) E. H. Grant, April 1st; Sec. Lt. F. C. Payne, April 3rd; Lt. (temp. Capt.) W. A. Johnson, May 5th; Lt. (temp. Capt.) H. P. S. Clogstoun, May 18th; Capt. W. Benn, D.S.O., July 12th; Capt. R. L. S. Raffles, Aug. 25th; (P.) Lt. B. A. Clay, July 7th; Lt. A. W. Barnett, July 15th.

FLYING BRANCH.—Lts. to be temp. Capts. while empld. as Capts. (A.) :—C. G. Haynes, Aug. 19th; J. Oliver, Aug. 22nd; M. E. Ashton, L. Campbell, V. E. Groom, Aug. 23rd; H. A. Hay, M.C., Aug. 26th; G. B. Bates, R. McLaughlin, (Hon. Capt.) R. L. Whalley, Aug. 27th; L. Murphy, M.C., Aug. 28th. Lts. (Hon. Capts.) to be temp. Capts. while empld. as Capts. (S.) :—A. G. Bishop, C. Hanson-Abbott, J. E. A. Hoare, D.S.C., R. Jarman, G. E. Wildman-Lushington, Aug. 8th.

Lts. to be temp. Capts. while empld. as Capts. (S.) :—P. Wickens, J. A. S. Wright, L. G. Wright, Aug. 8th; Lt. J. F. Alcock to be Lt. (A.) from (T.), Aug. 12th.

R. Jackson is granted a temp. commn. as Sec. Lt. (A. and S.), July 27th.

The following Flt. Cadets are granted temp. commns as Sec. Lts. (A. and S.) :—J. C. C. Lovelace, June 25th; F. R. Morgan, July 28th; F. W. McClive, R. C. Michaelson, Aug. 17th; W. N. Suckling, V. R. Hicks, Aug. 18th; H. P. Gardiner, A. Blackwell, H. Pattinson, G. K. Vandervord, Aug. 19th; J. C. Tyler, H. Stanier, D. Ruck, F. G. H. Bar, F. C. Ferrier, W. E. Hole, C. M. Willy, D'A. D. A. Greig, A. E. Robertson, Aug. 20th; W. S. D. Kinsey, E. B. Fielden, E. B. Appleby, G. C. Rayden, W. J. Nesbitt, A. H. McRoberts, T. Rennie, V. C. Cordingly, J. H. Hill, F. A. R. Borris, T. W. Lazenby, C. E. Goddard, M. Imeretinsky, A. H. Stickle, Aug. 21st; J. C. Raine, H. E. Harden, C. W. Verity, T. C. McNeale, H. W. Atherton, C. Langley, F. B. McElrea, D. C. Bain, Aug. 22nd; G. G. Williams, E. A. Rogers, T. G. Brooke, Aug. 23rd; J. T. Raymond, A. H. Duggan, Aug. 24th; F. J. Willenberg, R. W. Conway, J. F. Dick, R. A. K. Wiener, C. N. Young, J. A. LeGrange, E. C. Jones, A. R. Sharwood, T. Rothschild, C. W. Wright, F. D. Huggins, H. W. Phillipson, S. C. Leith, J. Scholteneyer, J. St. G. B. Nolan, N. D. Spranger, S. N. Bown, J. P. Melrose, J. E. F. Wilkins, A. L. B. Jaussonius, T. H. Buxton, Y. H. M. Crosby, N. Lotter, L. H. Jones, H. J. C. Kelly, P. Rabinson, Sept. 3rd.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (K.B.) :—R. Barrett, F. J. Bell, H. F. Turner, Aug. 20th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (Obsr. Officers) :—H. Hutchinson, O. L. Rogers, J. G. Dunlop, H. R. Milton, April 1st; H. T. Cock, May 26th; W. Middleton, July 15th; W. R. N. Cheetham, T. J. Birmingham, July 20th; J. C. Gleave, C. G. Weir, July 21st; E. F. Boyce, A. W. Robinson, July 22nd; T. A. Chilcott, Aug. 1st; G. E. Mackenzie, J. R. Moorhouse, F. R. Atkinson, Aug. 8th; P. W. Adams, C. S. Frost, R. F. Talbot, Aug. 10th; E. A. Welsford, Aug. 14th; H. Shaw, T. T. Eales, J. L. Goss, Aug. 15th; T. H. Walker, Aug. 16th; H. Bradbury, F. Player, Aug. 17th; M. Thorley, Aug. 26th; R. Henderson, Aug. 29th.

The following Prob. Obsr. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—F. T. Milton, P. A. Sainsbury, A. Hirschberg, Aug. 23rd.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—J. W. Howard, A. E. Amy, G. R. Bartlett, C. Bridgett, B. H. Du Fue, J. T. L. Attwood, C. M. Tupling, R. H. Walker, A. S. Russell, J. M. Rennie, F. E. West, A. B. Bennett, R. J. Thompson, H. E. Yates, H. C. Bowler, J. W. Brown, J. Sykes, C. E. Gauld, R. W. Symmonds, E. H. Leather, H. W. Howes, G. M. Scarfe, A. C. Bellinger, G. E. O. Dixon, A. W. Green, E. D. Evans, P. N. H. Whitlam, A. S. Wilson, L. E. F. Paxton, L. Arnold, A. Terry, E. J. E. Topham, M. McK. M. McLean, S. A. Beck, Aug. 23rd; E. H. Kemp, Aug 31st; F. F. Bates, N. D. Nunan, E. C. M. Reid, A. McG. Mitchell, J. MacDonald, H. T. Daniel, A. Peak, Sept. 1st; E. Conning, C. E. Merrett, N. A. Horlock, E. Garrett, F. R. Gibson, A. E. Hole, J. Bolton, Sept. 2nd.

The following are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—T. A. Evans (temp. Lt., R. W. Fus.), and to be Hon. Lt., April 1st; W. D. Potter (Lt., Gord. Highrs., T.F.), and to be Hon. Lt., May 20th; W. W. Smith (temp. Sec. Lt., Gord Highrs.), H. Milburn (temp. Sec. Lt., W. York R.), July 19th; G. G. Travis (temp. Sec. Lt., E. York R.), July 21st; B. D. Nicholson (temp. Sec. Lt., attd. Gord. Highrs.); L. C. Tonkin (temp. Sec. Lt., attd. Middx. R.); A. C. Vallance (temp. Sec. Lt., attd. Sea. Highrs.); A. Onthwaite (temp. Sec. Lt., attd. W. York R.); M. Ryan (Sec. Lt., E. Lan. R.); C. St. C. Stayner (Lt., N. Brunswick R., C.E.F.), and to be Hon. Lt., July 22nd; M. S. Anthony (temp. Capt. (Northd. Fus.), and to be Hon. Capt.; A. W. B. Becher, M.C. (Capt., Yorks L.I.), and to be Hon. Capt.; J. J. Ambler (temp. Sec. Lt., Northd. Fus.); W. T. Barnes (Sec. Lt., R. Fus.); T. Beck, M.C. (Lt. High. L.I.), and to be Hon. Lt.; R. A. Brunton, M.C. (Lt., Gord. Highrs., T.F.), and to be Hon. Lt.; W. M. M. Elvery (Lt., attd. R. Innis. Fus.), and to be Hon. Lt.; V. A. Fair, M.C. (temp. Sec. Lt., K.R.R.C.); A. G. Foster-Sutton (Sec. Lt., E. Kent R., T.F.); F. G. Godsell (Capt. Glouc. R., T.F.), and to be Hon. Capt.; A. G. Grant (Sec. Lt., High. L.I.); E. W. Griffin (Lt., Glouc. R., T.F.), and to be Hon. Lt.; A. Lilley (temp. Sec. Lt., attd. W. Rid. R.); F. J. Mawdesley (Lt., Cent. Ont. R., C.E.F.), and to be Hon Lt.; G. C. Schofield (temp. Sec. Lt., Leic. R.); G. Thompson, M.C. (temp. Sec. Lt., York and Lanc. R.), Aug. 1st; F. N. Billington (temp. Lt., A.O.D.), and to be Hon. Lt., Aug. 3rd; W. T. Mitchell (temp. Lt., R. Sc. Fus.), and to be Hon. Lt., Aug. 4th; R. P. Simmers (Lt., Gord. Highrs., T.F.), and to be Hon. Lt.; E. C. Clegg, M.C. (Lt., Wilts R., Spec. Res.), and to be Hon. Lt. F. C. Cook (temp. Sec. Lt., Bedf. R.); G. B. Barre (temp. Sec. Lt., R. Dub. Fus.); E. L. Gilshenan (temp. Lt., Glouc. R.), and to be Hon. Lt., Aug. 8th; A. J. C. Gormley (temp. Sec. Lt., Tank Corps); J. B. Heppel (Lt., Hereford R.), and to be Hon. Lt.; A. M. Barron, M.C. (Lt., Gord. Highrs, T.F.), and to be Hon. Lt.; J. Golding (temp. Sec. Lt., W. York R.); F. G. Kilby (Sec. Lt., R. War. R., Spec. Res.), Aug. 9th; H. W. Millish (Sec. Lt., R.F.A., Spec. Res.); J. C. H. Hartley (Sec. Lt., N. Lan. R., T.F.); J. M. Brown (Lt., D. Corn. L.I., Spec. Res.), and to be Hon. Lt.; W. E. Dowling (Capt., E. Lan. R.), and to be Hon. Capt.; G. H. Fender (Lt., R. W. Kent R., Spec. Res.), and to be Hon. Lt., Aug. 10th; J. Willson (Sec. Lt., Lond. R., T.F.), Aug. 13th; R. Inglis (temp. Sec. Lt., High. L.I.); F. L. Wolf (temp. Sec. Lt., R. Fus.); G. M. Knox (Lt., Sco. Rif., T.F.), and to be Hon. Lt.; J. Carrey (temp. Sec. Lt., attd. Lpool R.); H. G. Eldon (Sec Lt., Lond. R., T.F.), Aug. 14th; J. Huntley (temp. Sec. Lt., attd. Notts and Derby R.); C. S. Griffiths (temp. Sec. Lt., R. Ir. Rif.), Aug. 16th; A. W. H. Arundel (Lt., Quebec R., C.E.F.), and to be Hon. Lt ; E. B. Andrews (Sec. Lt., R.F.A., T.F.); R. Andrews, M.C. (Lt., Quebec R., C.E.F.), and to be Hon. Lt.; W. A Briggs, (Sec Lt., R.G.A., Spec. Res.), A. G. Currington (Sec. Lt., R. War. R., Spec. Res.), L. A. S. Harris (temp Sec. Lt., attd. Glouc. R.), S. A Huggard (temp. Sec. Lt., R. Dub. Fus.), F. T. Howell (Lt., Glouc. R., T.F.), and to be Hon. Lt., W. C. Kidd (temp. Sec. Lt., A. Cyclist Corps), S. T. R. Lloyd (temp. Sec. Lt,, Shrops L.I.), H. F. Lea (temp. Sec. Lt., N. Lan. R.), H. G. Rowe (temp. Sec. Lt., Lpool. R.), A. C. Simmons (Sec. Lt., Devon R., Spec. Res.), F. Smith (Sec. Lt., Lan. Fus., T.F.), J. Walker (temp. Sec. Lt., attd. Nort. R.), F. Walsh (temp. Sec. Lt., Manch. R.), D. Young (temp. Sec. Lt., attd. N. Lan. R.), J. B. Young (Lt., High. L.I., T.F.), and to be Hon. Lt., Aug. 17th; G. F. Morse (Sec. Lt., R.F.A., Spec. Res.), E. T. Hunt (Sec. Lt., R.G.A., Spec. Res.), E. A. Mallet (temp. Sec. Lt., attd. Rif. Bde), W. R. B. Mann (Lt., R.F.A., T.F.), and to be Hon. Lt., C. J. M. Turner (temp Sec. Lt., R. Innis. Fus.); M. C. Tozer (Lt., Durh. L.I., T.F.), and to be Hon. Lt., A E. White (Lt., Can. Rly. Services, C.E.F.), and to be Hon. Lt., T. Whittles (temp. Sec. Lt., Manch. R.), E. G. W. Coward (Sec. Lt., R.F.A., Spec. Res.), Aug. 24th; C. G. R. Lewis (Lt., Durh. L.I., T.F.), and to be Hon. Lt., N. Offord (temp. Sec. Lt., Middx. R.), A. Cooper (temp. Sec. Lt., W. York R.), K. P. O. Evans (Sec. Lt., S. Wales Bord. R., T.F.), G. E. Bates (temp. Sec. Lt., attd. Hamps R.), C. H. Sharp (Sec. Lt., Norf. R., Spec. Res.), Aug. 25th; I. W. F. Agabeg (Lt., S. Lan. R.), and to be Hon. Lt., L. R. James (Lt., Brit. Columbia R., C.E.F.), and to be Hon. Lt., A. W. Palmer (temp. Sec. Lt., Tank Corps), G. S. Routhier, M.M. (Lt., W. Ont. R., C.E.F.), and to be Hon. Lt., J. V. Scottorn (temp. Sec. Lt., Tank Corps), Aug. 26th; G. H. Power (temp. Lt., Manch. R.), and to be Hon. Lt., J. H. Adams (temp. Sec. Lt., attd. R. Fus.), Sept. 1st.

Sec. Lt. H. C. Petch relinquishes his commn. to resume medical studies, and is granted the hon. rank of Sec. Lt., May 18th.

Lt. C. G. L. Robertson (Sec. Lt., R.F.A., S.R.) relinquishes his commn. on ceasing to be empld., July 30th.

Lt. A. L. Heuther resigns his commn. to resume medical studies, and is granted the hon. rank of Lt., Sept. 4th.

Lt. A. B. Carmody relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lt., Sept. 4th.

Sec. Lt. H. J. Jaffe relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., Sept. 4th.

Lt. S. Hoffman resigns his commn., and is granted the hon. rank of Lt., Sept. 4th.

The following Sec. Lts. resign their commns. having been found permanently unfit for further instruction as Pilots or Obsrs. :—W. Lewis, W. Musson, W. J. O'Sullivan, F. A. Russell, A. D. N. Scott, F. Spurr, E. G. Tye, Sept. 4th.

The notification in "Gazette," July 30th, concerning Lt. (Hon. Capt.) H. G. Hall, D.S.C., to be Obsr. Officer, from (A. and S.) is cancelled.

The notification in "Gazette," Aug. 9th, concerning Sec. Lt. M. J. Morton is cancelled.

ADMINISTRATIVE BRANCH.—Lts. to be temp. Capts. whilst empld. as Capts. :—(Hon. Capt.) W. S. Ford, from (K.B.), May 1st, H. P. Tate, June 1st; V. G. Davis, June 19th; W. H. Bragg, June 30th; C. S. Bignell, G. M. Darragh, R. T. Kelly, July 26th; H. G. Dadley, D.C.M., H. G. Stuart, M.C., J. N. Wilkinson, Aug. 4th.

Sec. Lts. to be temp. Capts. whilst empld as Capts. :—R. W. Johnson, H. L. Nelson, Aug. 4th.

Sec. Lt. (temp. Capt.) A. Wombwell retains his temp. rank whilst empld. as Capt. from (T.), June 6th.

Sec. Lt. C. P. Andrews to be temp. Lt. whilst empld. as Lt., June 19th.

(*Continued on page 965.*)

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A REPORT ON THE A.E.G. ARMOURED AEROPLANE.

The following Report on the A.E.G. Armoured Biplane is published by the kind permission of the Technical Department of the Air Ministry, to whom the thanks of the Editor are due.

This machine was brought down by an R.E.8 of 21st Squadron, near Hinges, on May 16th, 1918.

[Compliments to the writer of the report on thus humorously adding insult to injury.—Ed.]

It bears the date February 3rd, 1918, stamped on the main planes, and also on portions of the fuselage, and is the first of its type to have been secured.

This aeroplane is designed for the purpose of carrying out offensive patrols against infantry, and is furnished with armour, which affords protection for its personnel. This armour appears, however, to be more or less experimental.

In general construction it closely follows the lines of the A.E.G. Twin Engined Bomber G.105, reported on in I.C. 607, though the arrangement of the power plant is, of course, entirely different.

A steel tubular construction is used practically throughout. The machine was badly crashed, and some details are, therefore, not available; but the General Arrangement Drawings at the end of this report may be regarded as substantially accurate.

The leading particulars of the machine are as follows:—

Area of upper wings	190.4 sq. ft.
Area of lower wings	168 sq. ft.
Total area of wings	358.4 sq. ft.
Area of upper aileron	11.2 sq. ft.
Area of lower aileron	10 sq. ft.
Area of tail plane	9.4 sq. ft.
Area of fin	7.6 sq. ft.
Area of rudder	6 sq. ft.
Horizontal area of body	48.6 sq. ft.
Side area of body	54.8 sq. ft.
Cross sectional area of body ...	14.4 sq. ft.
Area of side armour	33 sq. ft.
Area of bottom armour	29.4 sq. ft.
Area of armour bulkhead	10.4 sq. ft.
Engine, 200 h.p. "Benz"	
Crew—pilot and gunner	360 lbs.
Armament—three guns	
Petrol capacity	38 gallons
Oil capacity	3 gallons

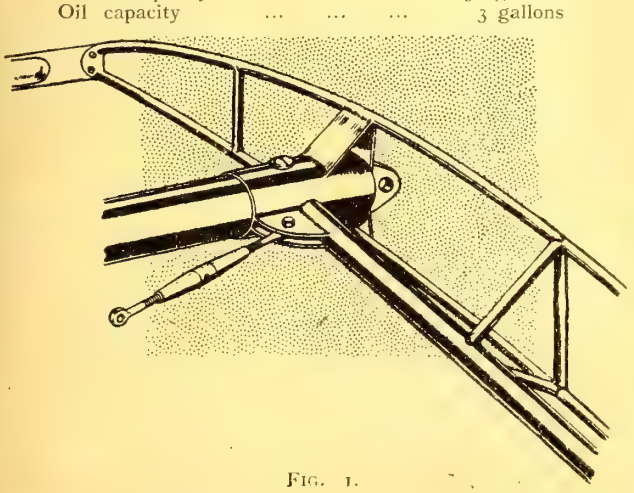


FIG. 1.

CONSTRUCTION.

WINGS.

The manner in which the wings are constructed is exactly as shown in the report of the A.E.G. Bomber—i.e., the spars consist of two steel tubes 40 mm. in diameter by 0.75 mm. thick. At their ends the upper and lower surfaces of the spares are chamfered away, and flat plates welded in position, so as to provide a taper within the washed-out portion of the wing tips. The wings were, unfortunately, so badly damaged that no accurate drawing of their section can be taken, but there is evidence that this very closely follows the section of the bomber, which has already been published. The ribs are of wood, and between each main rib is placed a half-rib joining the front spar to the semicircular section wooden strip which forms the leading edge. The wing construction is strengthened by two light steel tubes passing through the ribs close behind and parallel to the leading spar, which are used for housing the aileron control wires. The bracing against drag consists of wires and transverse steel tubes welded in position. At the inner end of the wings special reinforced ribs of light gauge steel tube are provided. The method of construction at this point is clearly shown in Fig. 1, which also indicates the manner in which the bracing tube is welded to a socket driven on the main spar. The spars are attached to the fuselage by plain pin joints.

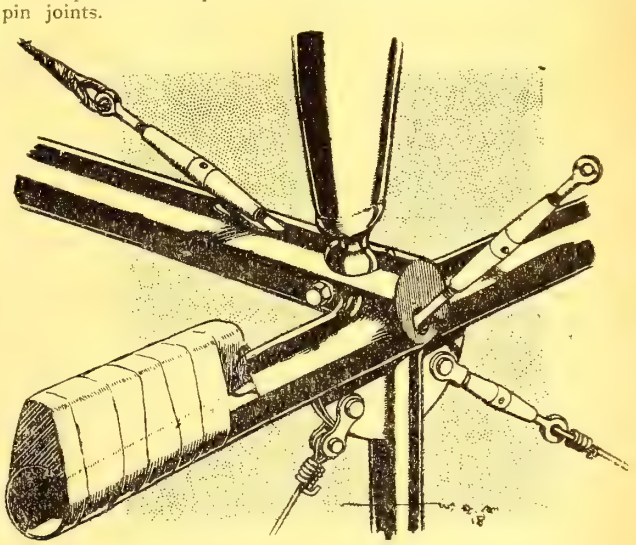
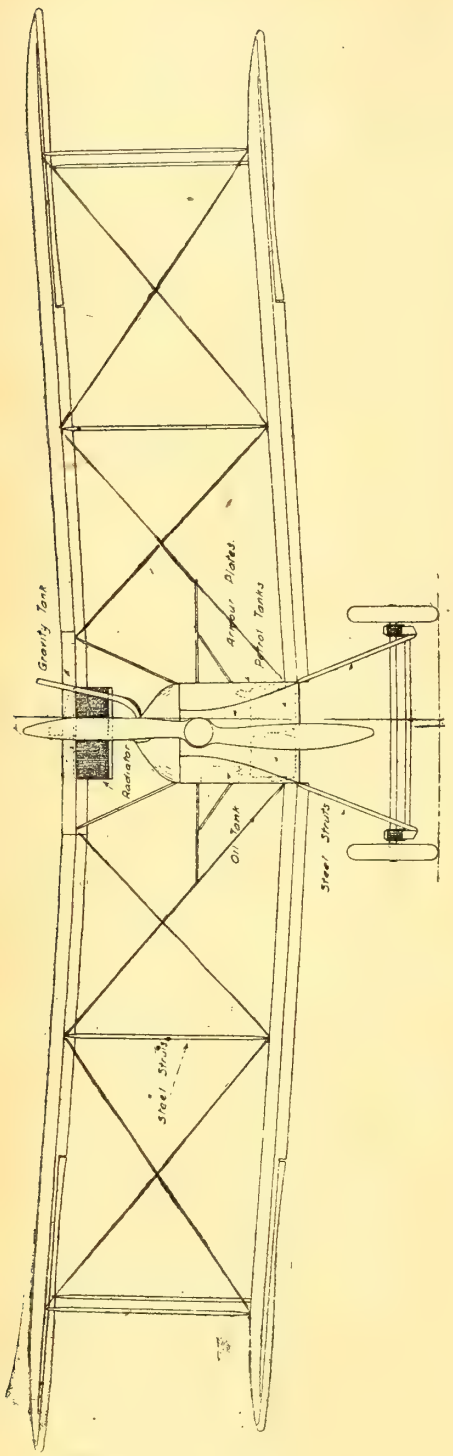
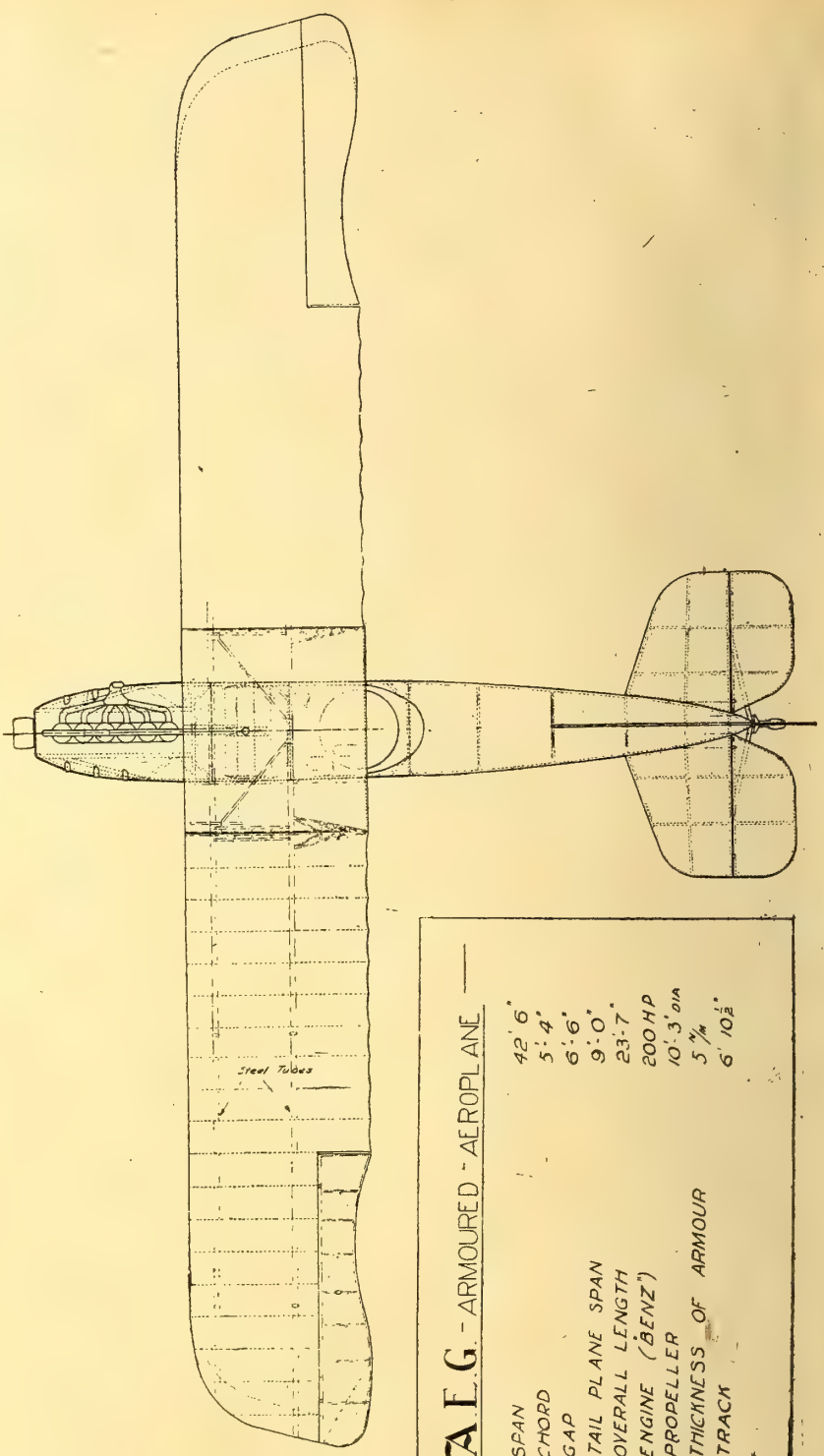


FIG. 2.

CENTRE SECTION.

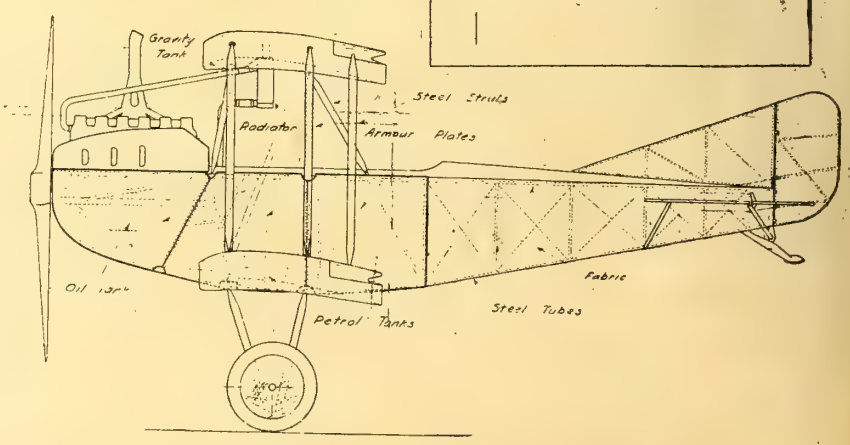
The centre section of the upper surface is constructed in a similar manner to that of the wings, except that it is considerably reinforced, and the spars are larger in diameter. The leading spar has a diameter of 51 mm. and the rear spar 45 mm. The centre section is secured to the fuselage by a system of stream-lined steel struts, the feet of which terminate in ball-ends dropped into sockets, and there bolted in position. One of these struts is shown in Fig. 2.





— A.E.G. - ARMOURED - AEROPLANE —

SPAN	42'6"
CHORD	5'4"
GAP	6'6"
TAIL PLANE SPAN	9'0"
OVERALL LENGTH	23'7"
ENGINE ("BENZ")	200 HP
PROPELLER	10'3" DIA
THICKNESS OF ARMOUR	5 mm
TRACK	6'10½"



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The centre section contains an auxiliary gravity petrol tank, and also the radiator, and is, therefore, substantially braced with steel tube transverse members.

The wings are set with a dihedral angle of approximately 6 deg.

Ailerons.

The aileron framework is of light steel tube throughout, the tube forming the trailing edge being flattened into an eliptical section. The ribs are fixed by welding. The framework of the ailerons on the upper wing is reinforced by diagonal bracing of light tube.

Struts.

These are of light steel tube streamline in section, tapered at each end, and terminating in a socket which abuts against a ball-headed pedestal carried on the wing spars; through the socket and the ball is passed a small bolt. The manner in which this attachment is carried out is exactly similar to that described in the report on the A.E.G. Bomber.

Fuselage.

The whole of the fuselage is built up of steel tubes welded together, and having affixed at their junctions sheet steel lugs, which serve as the anchorage for the bracing wires. The diameter of the longerons and of the frame verticals is 20 mm., except the last three members adjacent to the tail, of which the diameter is 16 mm. The welding throughout the fuselage appears to be of very high quality. In Fig. 2 is illustrated a joint, which occurs in the fuselage immediately in front of the pilot's cockpit. The longeron is, from this point to the rear of the gunner's cockpit, fitted with a wooden strip taped in position. This joint shows the method in which the cross bracing wires are furnished with an anchorage. In one or two points in the frame construction the bracing wire lies in the same plane as the transverse tube, and to allow for this a diagonal hole is drilled through the tube, and filled in with a small steel tube welded in place.

Engine Mounting.

This consists of a triangulated arrangement of steel tubes carrying hollow rectangular section steel bearers, on which the crank chamber is slung. The bearers are well trussed both in the vertical and horizontal planes, and are shown in dotted lines in the General Arrangement Drawings. The engine bearers themselves are 2 mm. in thickness, and have an approximate section of 2 1/16 ins. by 1½ in.

Tail.

The empennage possesses no particular points of interest, the planes having the usual tubular framework. The tail plane is not fitted with any trimming gear, but a method of adjustment is provided. This is shown in Fig. 3, which is self-explanatory. The diagonal struts which proceed from the base of the fuselage to the tail plane spar are fitted at each end with a method of adjustment shown in Fig. 4, allowing them to be extended as required according to the particular socket, which is used to carry the leading edge of the tail plane. Neither the elevators nor the rudder are balanced. The rudder post is mounted on the end of the fuselage, as shown in Fig. 5, in which it will be seen that the vertical frame tube of the fin is very stoutly attached to the frame by a triangulated foot.

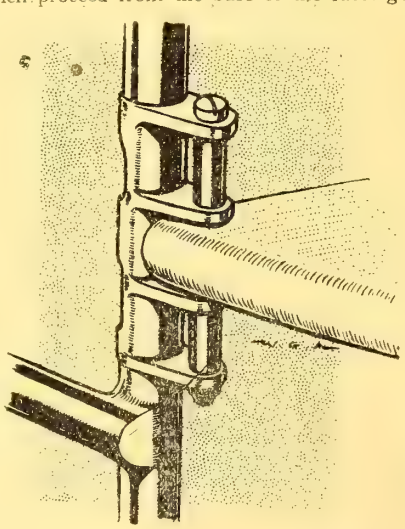


Fig. 3.

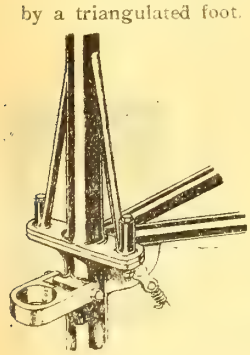


Fig. 5.

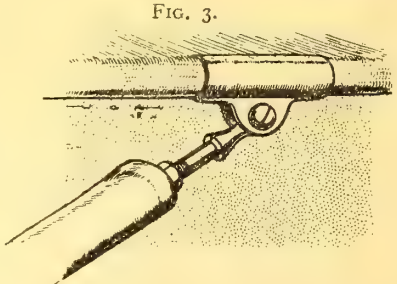


Fig. 4.

Landing Gear.

This is of the usual A.E.G. type, and is furnished with shock absorbers consisting of metal coil springs in direct tension, as is clearly shown in the General Arrangement Drawing.

The landing carriage axle has a diameter of 55 mm. The landing carriage struts, which are of similar section to those used between the planes, measure 70 mm. by 37 mm. At their upper ends they are furnished with ball and socket attachments similar to those of the interplane struts.

The wheels are fitted with 810 by 125 mm. tyres, and the track is 6 ft. 10½ ins.

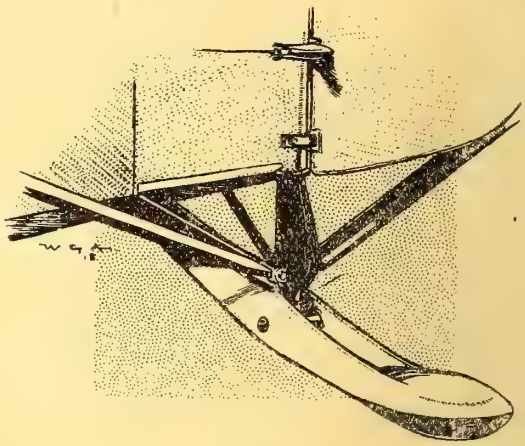


Fig. 6.

The tail skid is unusually heavy, and it is a built-up construction of welded sheet steel. It is mounted on a stout tail post, which is reinforced by four stream-line steel diagonals. The forward end of the tail skid projects inside the fuselage, and is there provided with four steel springs in direct tension. A sketch of the tail skid is given in Fig. 6.

Control.

This consists of the usual double-handled lever mounted on a transverse rocking shaft, which carries the elevator control cranks at each end. The upper ailerons are worked positively by wires which pass over pulleys on the wings spars at the outer struts, the outer and lower ailerons being connected by a stream-line steel tubular strut.

Engine.

The 200 h.p. Benz engine possesses no new features, and has already been made the subject of an exhaustive report.

Petrol System.

Underneath the pilot's seat are the two main petrol tanks, each of which contains 80 litres (equals 16 gallons). These tanks are of brass, and are fitted with Maximall level indicators. The gravity tank, containing 27 litres (equals 5½ gallons), is embedded in the centre section of the upper plane, where it forms the leading edge on the left-hand side. This tank is made of lead-covered steel. Cocks are provided, so that either the gravity tank or the pressure tanks, separately or together, can feed the carburettor.

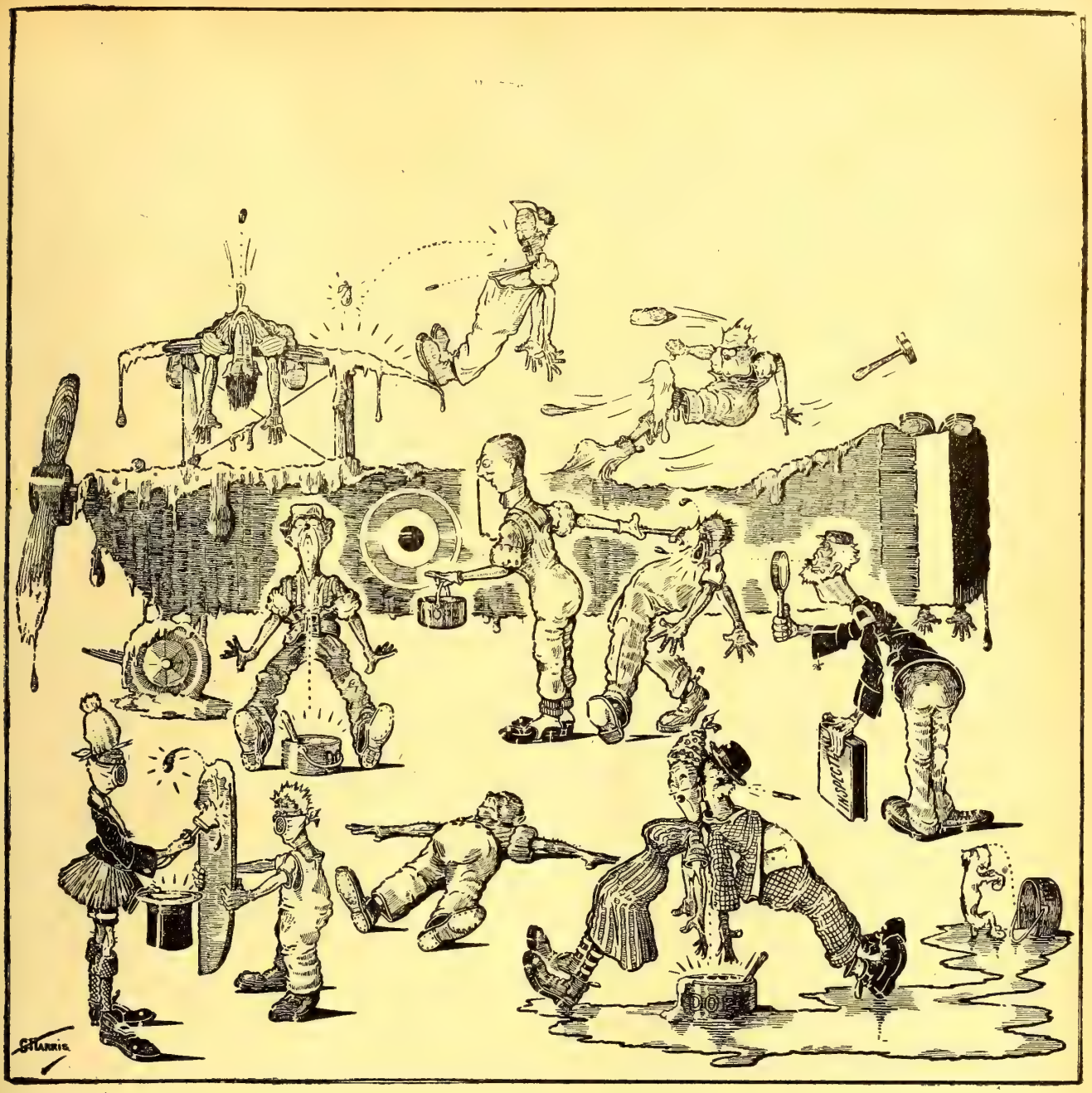
It is of interest to note that the chamber which is used in connection with the Benz petrol supply system is not, as is usually the case, contained in the main tank, but is a separate fitting mounted on the side of the engine.

Radiator.

The radiator is of the Daimler-Mercédès type, measuring 32½ ins. long by 11½ ins. high and 6 ins. deep. This is fitted with imitation honeycomb tubes, of which there are 118 running vertically, each being fitted with 48 gills. The radiator is carried in a steel cradle, into which it is easily inserted from above, and this in turn is supported on specially built-up steel ribs. It is placed so that the tank which forms the upper part of the radiator lies about flush with the centre section of the top plane. The shutter or flap for controlling the water temperature is made of 3-ply-wood stiffened with a light steel framework, and is mounted immediately behind the radiator, being worked by a handle within reach of the pilot. This handle is provided with a rack and pawl device. The shutter is 3¾ ins. deep, and is capable, therefore, of covering up about one-third of the total radiator surface. It will be noted that the position of the shutter behind the radiator is unusual.

Armour.

Protection for the pilot and gunner is afforded by armour, which is shown in the General Arrangement Drawing in thick lines. There are three panels at each side, and three panels at the bottom of the fuselage, an armour bulkhead being placed at the rear of the gunner's cockpit to protect him from behind. The armour is 5.1 mm. thick, and its total area is 105.8 sq. ft. The weight of the armour is thus approximately 860 lbs.



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Ammunition.	Angle to Normal Degrees.	Safe Range, Yards.	Unsafe Range, Yards.
German A.P.	0	—	600
	15	500	400
	30	400	300
Mark VII. P. Armour piercing	0 probably	700	600
	15	400	300
	30	300	200
German Spitze	0	150	100
	15	100	50
	30	50	
Mark VII.	0	50	
	15	50	
	30	50	

The armour is undoubtedly too light to afford protection against British armour-piercing bullets fired from the ground at a lower height than 500 feet, while a machine armoured with it would have to fly at, at least, 1,000 feet to be safe from all but a very low percentage of hits.

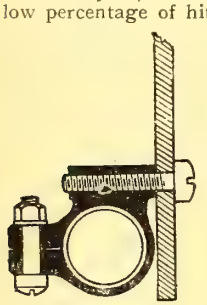


Fig. 7.

The armour does not appear to have been employed, as it might well have been, in a structural capacity—i.e., it is simply an attachment to the framework, to which it adds no material strength. Its appearance seems to point to the fact that it had been added by way of experiment, and that it was of a more or less makeshift character. It had, for instance, evidently been necessary to open out existing holes and cut new holes in the course of erection. The armour is attached by setscrews to clips clamped on the fuselage members, as shown in Fig. 7.

In this machine the pilot is not provided with a gun, but the observer has to control three, of which two (Spandau) are fixed on the flooring of his cockpit, whilst the other (Parabellum) is carried on a rotatable mounting.

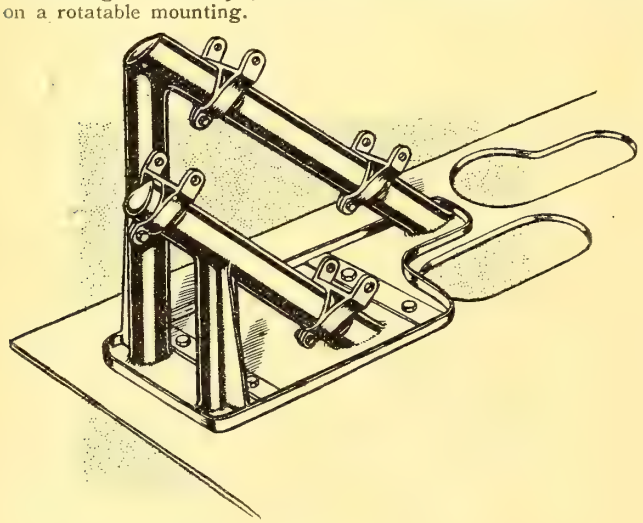


Fig. 8.

With regard to the fixed guns, these are secured to a couple of tubular steel brackets, mounted as shown in Fig. 8. The oval-section steel tubes, of which these brackets are composed, are welded to a light steel base, which forms a sort of tray, and is in turn bolted to the armour forming the cockpit floor.

Adjacent to these two guns, which fire forward at an angle of 45 deg., is a bracket carrying the belts of ammunition, which are fed from a large rotating drum.

In the right-hand front corner of the pilot's cockpit floor is a circular hole, which he would appear to use for sight purposes.

The fixed guns are controlled by Bowden wires and triggers mounted on a diagonal frame member, convenient to the gunner's right hand, as shown in Fig. 9.

The movable gun is of the Parabellum type, and the mounting is of the usual built-up wood variety. The gun cradle is, however, novel, the fixture for this purpose being illustrated in Fig. 10. It appears to be rather more handy than the usual German device, but is by no means lacking in weight.

The vertical carrier is swivelled at its base, and is secured in position by sliding bolts engaging with teeth cut in the turned-up base plate. These sliding bolts are worked by a direct acting thumb lever. The turn-table is made of a single hoop of wood

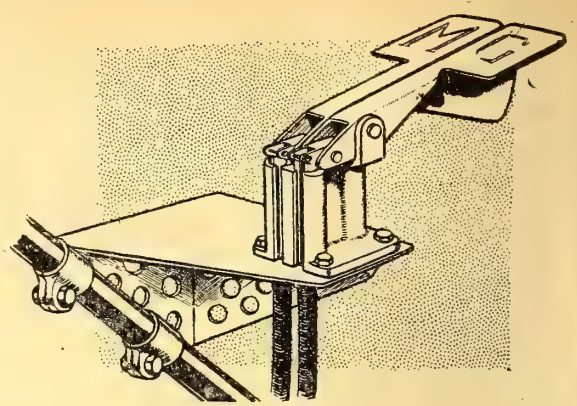


Fig. 9.

reinforced at the point where the gun is mounted by glued-on strips of plywood. The locking device is as shown in Fig. 11.

The transverse bracing in the immediate rear of the gunner's cockpit, at which point is mounted the armour bulkhead, suggests that it was the original intention for this aeroplane to carry a gun or guns firing downwards and backwards through a hole in the fuselage. The transverse arrangement of steel tubes and bracing wires is shown in Fig. 12.

The machine is fitted with the usual wireless leads and apparatus for heating, the dynamo being carried on a bracket attached to the fuselage immediately in front of the pilot's seat, where it is directly driven from the engine through a hand-

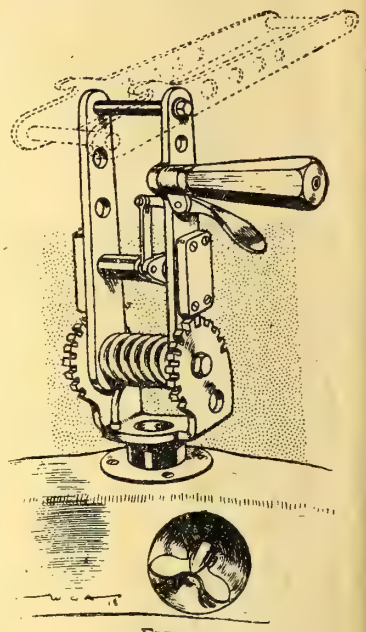


Fig. 10.

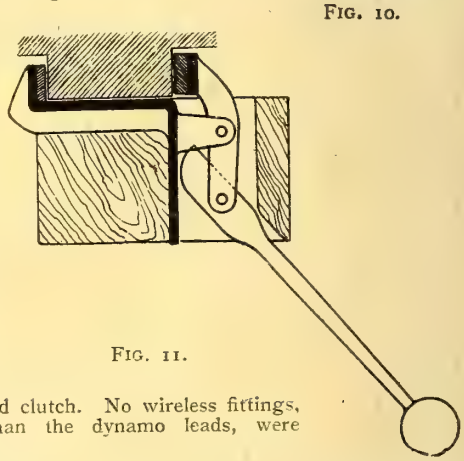


Fig. 11.

controlled clutch. No wireless fittings, other than the dynamo leads, were found.

The instruments fitted to this machine possess no new features of interest.

The fabric throughout is of good quality, but the dope appears to have been badly applied, as in many points it had completely peeled off the fabric.

The colours used are dark purple and dark green, and in contradistinction to the usual method by which they are arranged in well-defined polygons, are applied so as to give a cloudy effect, and appear to have been sprayed on.

The wing spar yields the following analysis :—

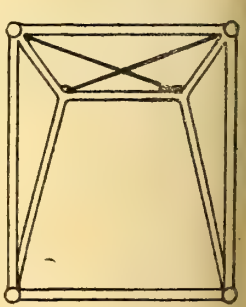


Fig. 12.

Carbon	.098 per cent.
Silicon	.011 per cent.
Sulphur	.017 per cent.
Phosphor	.014 per cent.
Manganese	.461 per cent.
Chromium	.036 per cent.

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REPORT ON THE HANNOVERANER BIPLANE.

This machine was brought down by anti-aircraft fire near Lestrem, on March 29th, 1918. As will be seen from the photographs, it is of highly characteristic design, and possesses numerous features of interest.

On labels protected by celluloid, and on the upper surfaces of the wings and fuselage, are identification marks with the date 15/2/18, showing that this machine is of recent construction.

Generally speaking, the construction is of wood throughout, steel being used sparingly, except in the interplane struts, landing chassis struts, centre section and some details of the tail.

Judged by contemporary British standards of design, the Hannoveraner biplane reaches a fairly high level, the construction throughout being sound, and the finish quite good.

The performance of the machine is not by any means bad.

The leading particulars of the machine are as follows:—

Weight Empty	1,732 lbs.
Total Weight	2,572 lbs.
Area of Upper Wings	217.6 sq. ft.
Area of Lower Wings	142.4 sq. ft.
Total Area of Wings	360.0 sq. ft.
Loading per sq. ft. of Wing Surface	7.29 lbs.
Area of Aileron, each	16.4 sq. ft.
Area of Balance of Aileron	1.6 sq. ft.
Area of Top Plane of Tail	10.0 sq. ft.
Area of Bottom Plane of Tail	19.2 sq. ft.
Total Area of Tail Plane	29.2 sq. ft.
Area of Fin	6.5 sq. ft. approx.
Area of Rudder	6.4 sq. ft.
Area of Elevators	22.0 sq. ft.
Horizontal Area of Body	53.2 sq. ft.
Vertical Area of Body	91.6 sq. ft.
Total Weight per h.p.	14.3 lbs. per h.p.
Crew	Pilot and Observer.
Armament	1 Spandau firing through propeller. 1 Parabellum on ring mounting.
Engine	Opel Argus, 180 h.p.
Petrol Capacity	37½ gallons.
Oil Capacity	3 gallons.

Performance.

(a) Climb to 5,000 ft.	7 mins.
Rate of climb in ft. per min.	590.
Indicated air speed	68.
Revolutions of Engine	1,495.
(b) Climb to 10,000 ft.	18 mins.
Rate of climb in ft. per min.	340.
Indicated air speed	65.
Revolutions of Engine	1,475.
(c) Climb to 13,000 ft.	29 mins. 45 secs.
Rate of climb in ft. per min.	190.
Indicated air speed	62.
Revolutions of Engine	1,445.

Speed.

At 10,000 ft. 96 miles an hour; Revolutions, 1,565.
At 13,000 89½ miles an hour; Revolutions, 1,520
Service ceiling at which rate of climb is 100 ft. per min. 15,000.

Estimated absolute ceiling	16,500
Greatest height reached	14,400 in 39 mins. 10 secs.
Rate of climb at this height	120 ft. per min.
Air endurance	About 2½ hours at full speed at 10,000 ft., including climb to this height.
Military load	545 lbs.

Stability.

The machine is nose-heavy with the engine off, and slightly tail-heavy with the engine on. It tends to turn to the left with the engine on.

Controllability.

The machine is generally light on controls, except that the elevator seems rather insufficient at slow speeds. It is not very tiring to fly, and pulls up very quickly on landing.

View.

The view is particularly good for both pilot and observer. The former sits with his eyes on a level with the top plane, and also enjoys a good view below him on account of the narrow chord of the lower plane.

Construction.

Wings.

The general arrangement of the Hannoveraner wings is somewhat reminiscent of the R.E.8. except, of course, that the bottom planes have no ailerons. The upper wings are practically flat in end elevation, but the lower have pronounced dihedral angles of 2.7 deg., and are set with a positive stagger of 2 ft. 7⅞ ins. The chord of the upper plane is 5 ft. 10¾ ins., and that of the lower plane 4 ft. 3 ins. In flying position, therefore, the trailing edge of the lower plane is slightly in advance of that of the upper plane. The angles of incidence marked on the manufacturer's rigging diagram, which is fixed to the side of the fuselage, and stamped on the fabric of the wing, are as follows:—

Lower Wings	5½ deg. at fuselage.
	5 deg. at struts.
Top Wings	5 deg. throughout.

The lower wings are carried direct from the bottom edge of the fuselage, the roots of the upper planes being carried on a rigidly constructed centre section, which embraces the radiator and the gravity feed petrol tank. The rearward portion of the centre section is cut away immediately over the pilot's seat, and at this point the wing is about 1 ft. above the upper surface of the fuselage. The lower plane has no very pronounced wash-out, but this feature is more noticeable in the upper plane, and is enhanced by the design of the ailerons, the tips of which are set at a slightly negative angle. This gives the characteristic German appearance to the aeroplane when seen in flight. In contrast with that of the majority of German aeroplanes, the wing section is rather flatter than usual, Fig. 1.

In Fig. 2 is given a scale drawing of the complete rib. The spars are of the usual built-up hollow section. The attachment between the wings and the fuselage is such as to permit quick detachability in case of need. It consists of a simple ball and keyhole socket device. The spars terminate in steel boxes with horizontal slots which engage with knobs or balls mounted on



(A).—Side View of the Hannoveraner Biplane.

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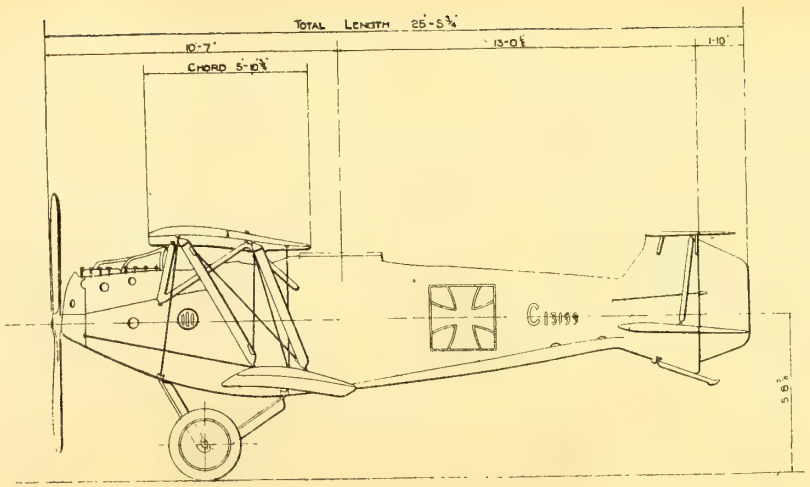
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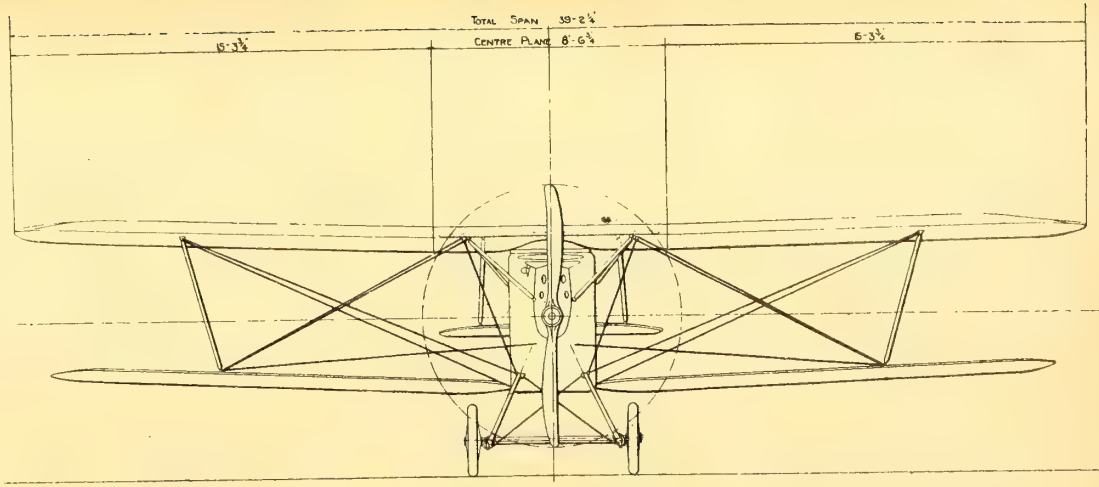
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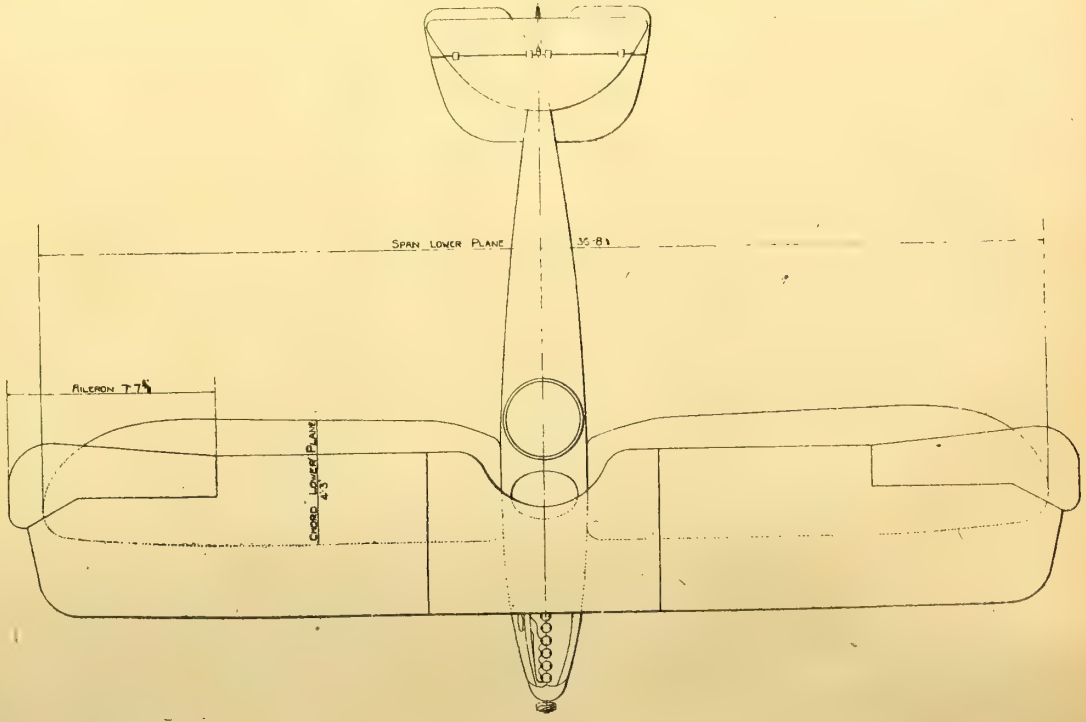
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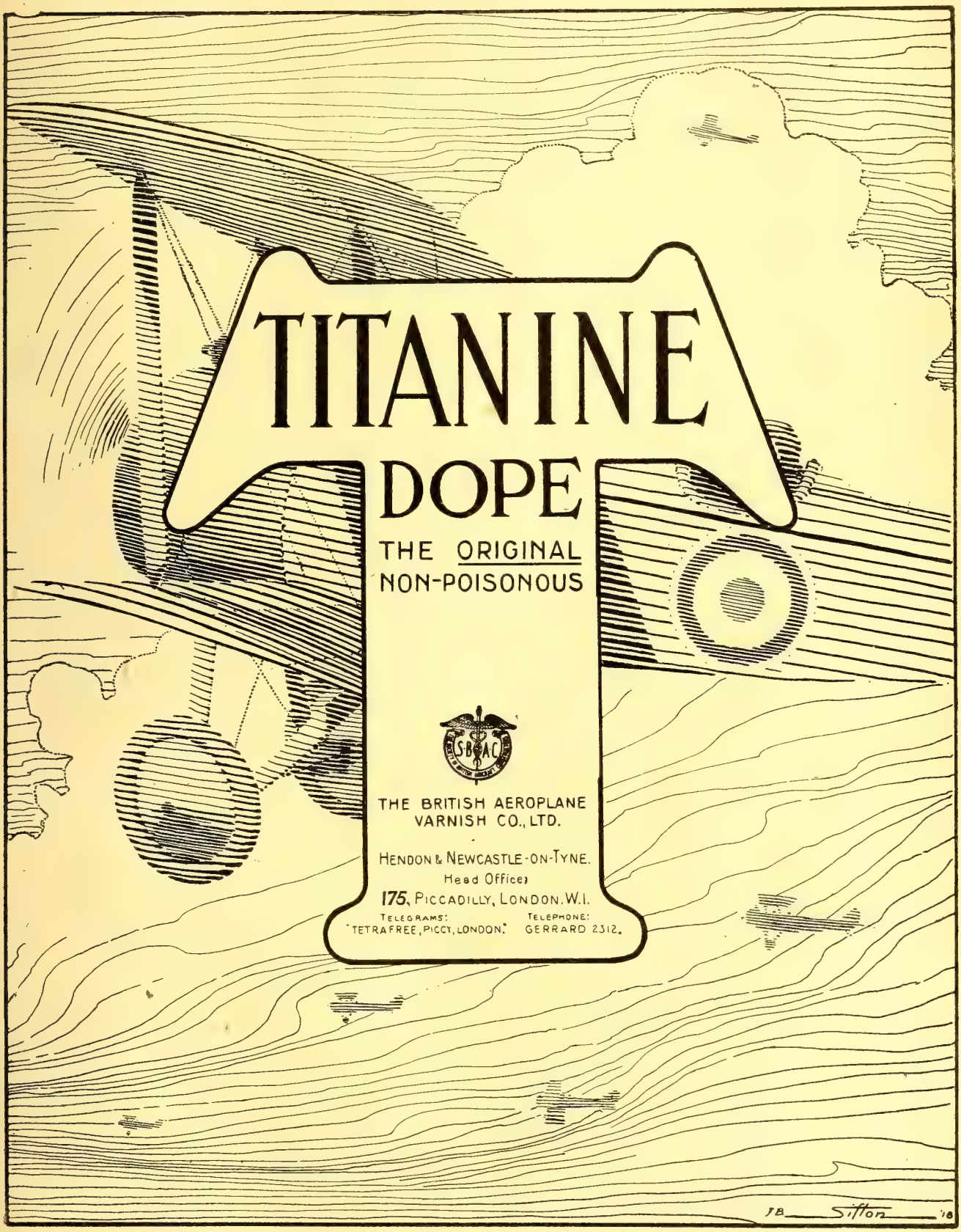


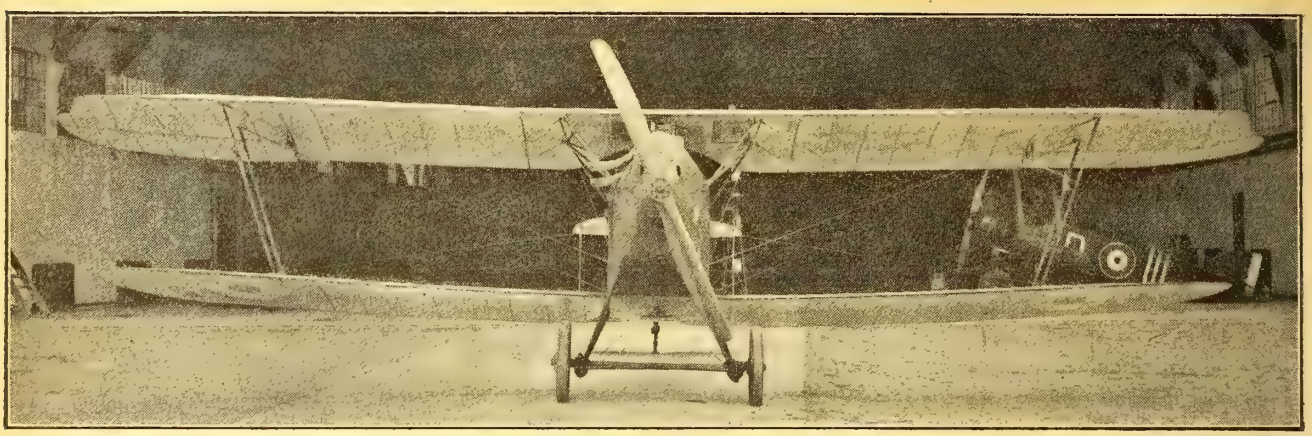




HANNOVERANER BIPLANE.

SPAN	39′	2¼″
,, Lower Plane	36′	8½″
CHORD	5′	10¾″
GAP, ... (about)	5′	3″
TAILPLANE SPAN ... (Upper)	6′	9″
,, ,, ... (Lower)	8′	0″
OVERALL LENGTH	25′	5¼″
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(B).—Front View of the Hannoveraner Biplane.

the fuselage members. On entering the knobs into the slots and sliding the wings backwards for a distance of $\frac{1}{2}$ in., the necks of the balls are engaged with the constricted part of the slots, and are then maintained in this position by vertical bolts passing through the spar boxes.

Spring doors are fitted on the lower plane to allow of the inspection of the pulleys for the aileron control wires.

Struts.

These are of plain steel tubing of $1\frac{5}{8}$ in. diameter, and are fitted with wooden fairings, secured by wrappings of fabric, the final section being of fair streamline form with a length of $4\frac{3}{8}$ ins. and a breadth of $1\frac{3}{4}$ in. The ends of the strut tubes are tapered, welded up and drilled, the method of attachment to the spars being shown in Fig. 3.

The centre section struts are streamline section, and consist of flattened steel tubes, welded together so as to form a triangulated construction. These struts are secured to the fuselage in the manner set forth in Fig. 4. At their upper extremities, as shown in Fig. 5, they terminate in ball and socket joints, the box portions of which are carried on the spars of the top plane centre section.

With regard to the strut sockets used in other positions, and as illustrated in Fig. 3, these are of a standardised design, except the tubular socket itself, which is adapted to be welded on to the spar plate at different angles according to circumstances.

The main lift wires are taken from the strut sockets of the upper plane to the bottom edge of the fuselage, and are there anchored to stout clips, of the type shown in Fig. 6. These clips are bent round the bottom of the fuselage longeron, and have a horizontal extension carrying a steel strap which passes right across the fuselage, immediately under its wooden transverse member.

Fuselage.

This is of approximately rectangular section amidships, tapering off to oval near the tail. It consists of the usual wooden framework of four longerons reinforced and covered in with three-plywood 1/16 in. thick. This is applied in square panels in similar manner to that which obtains in the Albatros machines, but, in this case, is covered all over with doped fabric.

Wiring is absent from this construction, but the fuselage is transversely braced internally with wooden diagonal members,

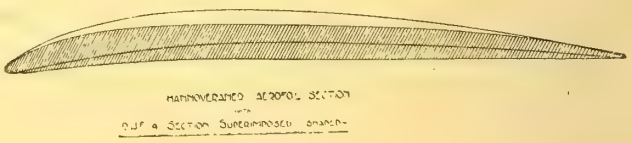


Fig. 1.

which, however, occur at only one point about half way between the gunner's cockpit and the tail. This is shown in Fig. 7.

At the tail end of the fuselage holes are cut in the covering to facilitate lifting the tail, so that the weight of the machine is carried on the longerons. In Fig. 7 can be seen at the extreme

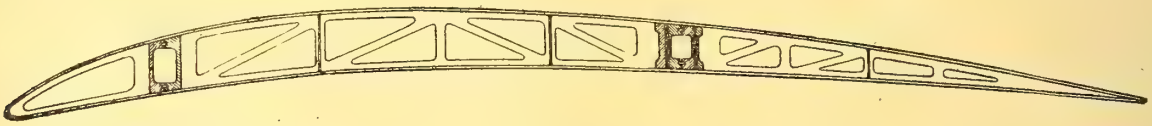


Fig. 2.

end of the fuselage a strut fastened to cross members. This continues to the top of the fin and forms an attachment for the upper plane of the tail.

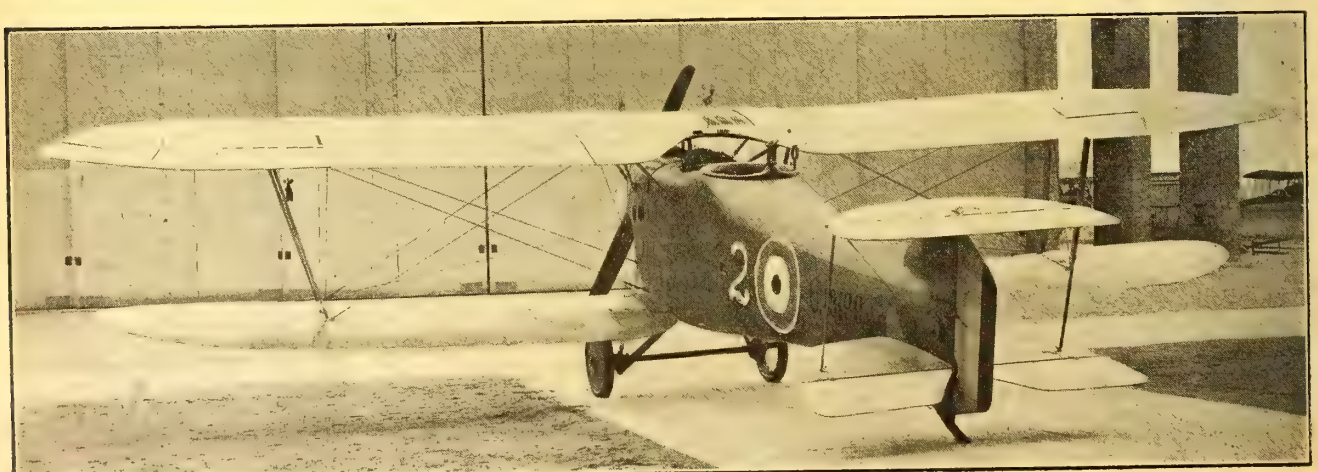
The depth of the fuselage at the gunner's cockpit is unusually great, being 4 ft. 7 ins., with a width of 3 ft. 2 ins. Forward of this point the fuselage is sharply tapered in the vertical plane, but more gently faired off in the horizontal plane.

The engine is only partially covered in.

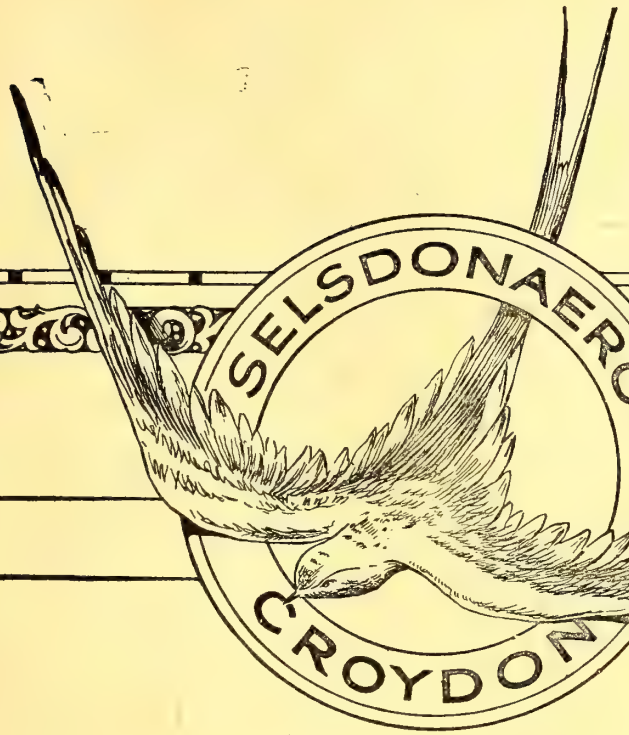
Between the pilot's and gunner's cockpit is fitted a stout cross member of steel tube.

Undercarriage.

This is of the usual design, consisting of tubular steel struts with wooden fairings wrapped on with tape. The forward struts



(C).—Three-quarter Rear View of the Hannoveraner Biplane.



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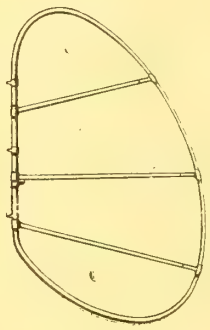
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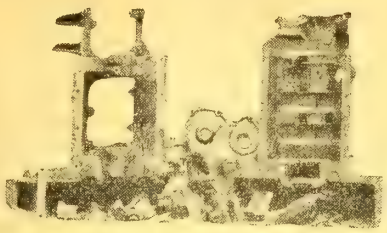


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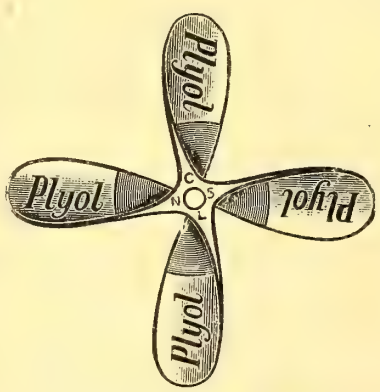
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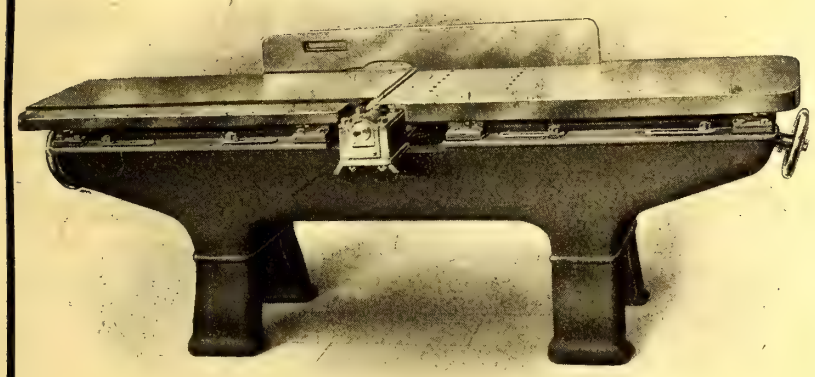
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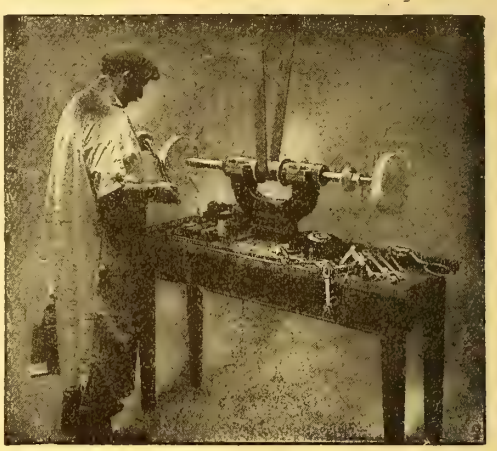


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Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone. London." 3540 Victoria (3 lines).

Aeroplane Manufacturers—

Aircraft Manufacturing Co., Ltd., Hendon. 'Airmanship, Hyde, London." Kingsbury 220.
Armstrong, Sir W., Whitworth & Co., Ltd., Newcastle - on - Tyne "Armstrong Aviation, Newcastle-on-Tyne." Gosforth 500.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich" Norwich 851.
British & Colonial Aeroplane Co., Ltd. (The Bristol Co.), Filton, Bristol. "Aviation, Bristol." Bristol 3666.
British Caudron Co., Ltd., Broadway, Cricklewood, N.W.2. "Caudroplan, Crickle, London." Hampstead 5551.
Central Aircraft Co., High Road, Kilburn, N.W.6. "Aviduction, Phone, London." Hampstead 4403 and 4424.
Davidson Aviation Co., Ltd., Hammersmith, W.6. Hammersmith 1092 (3 lines).
Dawson, John, & Co., Ltd., Newcastle-on-Tyne. "Dependable, Newcastle-on-Tyne." Central 2604 (2 lines).
Eastbourne Aviation Co., Ltd., Eastbourne. "Aircraft, Eastbourne" Eastbourne 1176.
Glendower Aircraft Co., Ltd. 54, Sussex Place, South Kensington, S.W.7. "Glenacelle, Southkens, London." Kensington 7605 (3 lines).
Grahame-White Aviation Co., Ltd., London Aerodrome, Hendon. "Volplane, Hyde, London" Kingsbury 120.
Handley Page, Ltd., 110, Cricklewood Lane, N.W.2. "Hydrophid, Crickle, London." Hampstead 7420
Hooper & Co., Ltd., 54, St. James St., Piccadilly, London, S.W. "Sociable, St. James, London." Regent 912.
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).
Martinsyde Ltd., Brooklands, Byfleet, "Martinsyde, Weybridge." Woking 331; Byfleet 171.
National Aircraft Manufacturing Co, Ltd., 15, Drummond Crescent, Seymour Street, Euston. Museum 3373.
"Nieuport" & General Aircraft Co., Cricklewood, London, N.W.2. "Nieuscout, Crickle, London." Willesden 2455.
The Regent Carriage Co., Ltd., 126/132, New King's Road, Fulham, S.W.6. "Carbodis, London." Putney 2240-2241.
Roe, A. V., & Co., Ltd., Manchester. "Triplane, Manchester" City 8530-8531, Manchester.
Saunders, S. E., Ltd., East Cowes, I.O.W. "Consuta, East Cowes." Cowes 193.
Short Bros., Rochester, Eastchurch and Whitehall House, S.W. "Tested, Phone, London." Regent 378.
Sopwith Aviation Co., Ltd., Kingston-on-Thames. "Sopwith, Kingston" Kingston 1088 (8 lines).
Standard Aircraft Manufacturing Co., 28, Bow Common Lane, E. East 2823.
Tarrant, W. G., Byfleet, Surrey. "Tarrant, Byfleet." Byfleet 1, 2 & 3.
Thames Aviation Works, 141, Curtain Rd., E.C.2. London Wall 9766.
Vickers, Ltd., Imperial Court, Basil Street, Knightsbridge. S.W.3 "Vickerfyta, Knights, London." Kensington 6810.
Waring & Gillow, Ltd., Hammersmith. "Warisen, Ox, London." Museum 5000.
Westland Aircraft, Yeovil. "Aircraft, Yeovil" Yeovil 129.
White, J. Samuel, & Co., Ltd., East Cowes. "White, East Cowes." Cowes 3.
Whitehead Aircraft (1917), Ltd., Richmond, Surrey. "Whitecraft, Richmond, Surrey." Richmond 1780-1.
Witton & Witton, 143, Fonthill Road, Finsbury Park, London, N.4. North 2110.
Wycombe Aircraft Constructors, Ltd., High Wycombe, Bucks. "Aircraft, High Wycombe." High Wycombe 84.

Airships—

Airships, Ltd., High Street, Merton. Wimbledon 1314.
Short Bros., Rochester, Eastchurch, and Whitehall House, S.W. "Tested, 'Phone, London." Regent 378.
C. G. Spencer and Sons, Ltd. (See under "Balloons").

Aluminium Castings (Sand and Die)

Coan, R. W., 219, Goswell Road, London, E.C.1. "Krankases, Isling, London." City 3846.

Balloons—

C. G. Spencer and Sons, Ltd., 56A, Highbury Grove, N.5. "Aeronaut, London." Dalston 1593.

Bent Timber Parts—

Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.
The Atlas Bedstead Company, Bilston. "Atlas, Bilston." Phone No. 8 and 51.

Bearings (Etonia Cast Phosphor Bronze)

Yorkshire Engineering Supplies, Ltd., Wortley, Leeds. "Yes, Leeds." Central 3927.

Blowpipes (Oxy-Acetylene)—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic. 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Vic. 3540 (3 lines).

Books (Aero Engines).

Dykes' Auto Encyclopedia, Gillam Dome Buildings, Richmond, Surrey

Buildings—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.
Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey. Wimbledon 1313.
Rubery, Owen, & Co, Darlaston, South Staffs.

Cable Coverings and Cable Controls—

The Bowden Brake Co., Ltd., Tyseley, Birmingham. "Bowden, Acock's Green." Acock's Green 103 & 104.
Herbert Terry & Sons, Ltd., Redditch "Springs, Redditch." Redditch 61.

Carburettors—

Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2. Victoria 4670

Casein—

Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C. 3. "Suricodon, Fen, London." Avenue 34 and 35

Celluloid (Non-Flam.)—

Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London." Central 1306-7.

Clothing—

Burberrys, Haymarket, S.W.1. Regent 2165.
Dunhill's, Ltd, Euston Road, N.W.1. "Dunsend, London." North 3405-6

Component Parts—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (4 lines).
Central Aircraft Co., High Road, Kilburn, N.W.6 "Aviduction, Phone, London." Hampstead 4403 & 4404.
P.D.V. Aircraft Co., Ltd., Princes Street, Richmond. "Aeros, Richmond" Richmond 1681.
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros., Bilston." Bilston 10.

Cords, Tapes, and Threads—

MacLennan, J., & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Dopes—

British Aeroplane Varnish Co., Ltd., 166, Piccadilly, W.1. "Tetrafree, Piccy, London." Gerrard 2312.
British Cellulose Co., 8, Waterloo Place, S.W.1. "Cellutate, London." Regent 4046.
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.
Cellon, Ltd., 22, Cork Street, London, W.1. "Ajawb, Reg, London." Gerrard 440.

Engines and Parts—

Allen, W. H., & Co., Ltd., Bedford. "Pump, Bedford." Bedford No. 1.
Arrol-Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Beardmore Aero Eng, Ltd, 112, Great Portland Street, W 1. "Beardmore, London." Gerrard 218.
Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W.1. "Aeroflight, Vic, London." Vic. 7026.
Gordon Watney & Co., Ltd., Weybridge. "Mercédès, Weybridge" Weybridge 550 (7 lines).

Engines and Parts (continued)—

Green Engine Co., Ltd., Twickenham. Richmond 1203.
Gwynnes, Ltd., Hammersmith, W "Gwynne, Hammersmith." Hammersmith 1910.
Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W "Nitrifier, London" Gerrard 8926
Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1654-5-6
Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton." Wolverhampton 985
The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1. "Elevenfold, London." Walthamstow 811 (2 lines).
Walton Motors, Ltd., Walton-on-Thames. "Motors, Walton-on-Thames." Walton-on-Thames 220.

Electrical Accessories—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Eusroad, London." Museum 70.
Premier Electric Heaters, Ltd., 258, 259, and 360, Bradford Street, Birmingham. "Fahrenheit, Birmingham." Midland 981.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Electric Cables—

E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 24x.
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2207; London Wall 1564.

Electric Lighting and Power—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.
Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Eusroad." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—

W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines).

Flare Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flexible Shafts—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Fluxes—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools—

Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton." Bournemouth 1160.

Furniture (Office)—

Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2. London Wall 573 and 6179.

Galvanising—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

Gauges—

J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17.

Gears—

Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham. "Mosgear, Birmingham." East 407.

Glue—

Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Bececolin, Cannon, London." City 1206.
Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Phone, London" Avenue 4611-2.
Mendine Co., 8, Arthur Street, E.C. Bank 5873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3.

Goggles—

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Hack Saw Blades and Machines—

Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880.

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Heating and Ventilating—
Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 372 (2 lines).
Sturtevant Engineering Co, Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).
The Thames Bank (Blackfriars) Iron Co., Ltd., Upper Ground Street, London, S.E.1. "Hot Water, Friars, London." Hop 763.

Hollow Spars—
McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718.

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1308.

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17 "Aneroid, Phone, London." Walthamstow 180.

Leather for Aeroplanes—
George Angus and Co., Ltd. Newcastle-on-Tyne. City 72. Central 956-7. Quayside City 73.

Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London. "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1. "Vicksmag, Phone, London" Museum 430.
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry." Coventry 1008-1009.

Metal Casement Manufacturers—
Henry Hope and Sons, Ltd., 55, Lionel Street, Birmingham. "Conservatory, Birmingham." Central 999 (2 lines).

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham. "Clifford, Birmingham." Central 42-43. Avenue 1432.

Metals in General—
Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London." City 6342.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4959.
Aircraft Supplies Co, Ltd., Ascol House, 135, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton 1041.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Lombard Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing. Eusroad, London." Museum 70.
Mountford, Fredk., Lt., Lifford, Birmingham. "Fremo, Birmingham." King's Norton 261.
Rubery Owen & Co., Darlaston, South Staffs.
Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Metal Parts and Fittings (continued)
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston" Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford." Keynsham 21.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.
Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines)
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham." Central 793.
MacLennan, J., & Co, 30, Newgate Street, E.C.1., and at Glasgow Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines).

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames.
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd, 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2. "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London." London Wall 3266-3267.
C. G. Spencer and Sons, Ltd. (See under "Balloons").

Piston Rings—
British Chuck & Piston Ring Co., Coventry "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.
Allen & Simmonds, Ltd., Reading.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." 24214 Leeds.
The Pegasus Aircratt Co., Ltd., Totterdown Street, Tooting, S.W.17 Streatham 1242.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil. Yeovil 129.

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galvradico, Wesdo, London." Mayfair 4826.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 166

Rubber Tubing & Accessories—
Hancock, James Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Masticator, Isling, London." City 3811 and 3812.

Safety Belts—
C. H. Holmes and Son, 38, Albert Street, Manchester. "Semloh, Manchester." City 4432.

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Invertors, Redditch." Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Southampton 1337.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds. Leeds 21953.

Searchlights & Landing Lights—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd, Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London" Vic 4830.
British Metal (Kingston), Ltd., Kingston-on-Thames. [Staffs.
Rubery Owen & Co, Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Sparking Plugs—
Lodge Sparking Plug Co., Ltd., Rugby. "Igniter, Rugby." Rugby 235.
Ripault, Leo. & Co., Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

Springs—
Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Steel—
Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Firth, Thos., & Sons, Sheffield. "Firth, Sheffield." Sheffield 3230 to 3237.
Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Steel Stamps and Markings—
John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines)

Taper Pins—
Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—
MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

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The Aeroplane

Acetylene Welding Plant—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London" Vic 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London" 3540 Victoria (3 lines)

Aeroplane Manufacturers—

Aircraft Manufacturing Co., Ltd., Hendon. "Armanship, Hyde, London" Kingsbury 220
Armstrong, Sir W., Whitworth & Co., Ltd., Newcastle-on-Tyne "Armstrong Aviation, Newcastle-on-Tyne" Gosforth 500.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich" Norwich 851
British & Colonial Aeroplane Co., Ltd. (The Bristol Co.), Filton, Bristol "Aviation, Bristol" Bristol 2006
British Caudron Co., Ltd., Broadway, Cricklewood, N.W.2 "Caudroplan, Crickle, London." Hampstead 1551
Central Aircraft Co., High Road, Kilburn, N.W.6 "Aviduction, Phone, London" Hampstead 1403 and 4424
Davidson Aviation Co., Ltd., Hammersmith, W.6 Hammersmith 1092 (3 lines)
Dawson, John, & Co., Ltd., Newcastle-on-Tyne "Dependable, Newcastle-on-Tyne" Central 2601 (2 lines)
Eastbourne Aviation Co., Ltd., Eastbourne "Aircraft, Eastbourne" Eastbourne 1176
Glendower Aircraft Co., Ltd. 54, Sussex Place, South Kensington, S.W.7 "Glenacelle, Southkens, London" Kensington 7605 (3 lines)
Grahame-White Aviation Co., Ltd., London Aerodrome, Hendon. "Volplane, Hyde, London" Kingsbury 120
Handley Page, Ltd., 110, Cricklewood Lane, N.W.2. "Hydrophid, Crickle, London" Hampstead 7420
Hooper & Co., Ltd., 54, St. James St., Piccadilly, London, S.W. "Sociable, St. James, London" Regent 912.
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines)
Martinsyde Ltd., Brooklands, Byfleet, "Martinsyde, Weybridge" Woking 331; Byfleet 171.
National Aircraft Manufacturing Co., Ltd., 15, Drummond Crescent, Seymour Street, Euston Museum 3373.
"Nieuport" & General Aircraft Co., Cricklewood, London, N.W.2. "Nieuscout, Crickle, London" Willesden 2455
The Regent Carriage Co., Ltd., 126/132, New King's Road, Fulham, S.W.6 "Carbodis, London." Putney 2240-2241.
Roe, A. V., & Co., Ltd., Manchester "Triplane, Manchester" City 8530-8531, Manchester
Saunders, S. E., Ltd., East Cowes, I.O.W. "Consuta, East Cowes" Cowes 103
Short Bros., Rochester, Eastchurch and Whitehall House, S.W. "Tested, Phone, London." Regent 378
Sopwith Aviation Co., Ltd., Kingston-on-Thames "Sopwith, Kingston" Kingston 1088 (8 lines).
Standard Aircraft Manufacturing Co., 28, Bow Common Lane, E. East 2823.
Tarrant, W. G., Byfleet, Surrey. "Tarrant, Byfleet" Byfleet 1, 2 & 3
Thames Aviation Works, 147, Curtain Rd., E.C.2 London Wall 9766
Vickers, Ltd., Imperial Court, Basil Street, Knightsbridge, S.W.3 "Vickerfyta, Knights, London." Kensington 6810.
Waring & Gillow, Ltd., Hammersmith. "Warisen, Ox, London." Museum 5000.
Westland Aircraft, Yeovil. "Aircraft, Yeovil" Yeovil 129
White, J. Samuel, & Co., Ltd., East Cowes "White, East Cowes" Cowes 3
Whitehead Aircraft (1917), Ltd., Richmond, Surrey. "Whitecraft, Richmond, Surrey." Richmond 1780-1.
Witton & Witton, 143, Fonthill Road, Finsbury Park, London, N.4 North 2110.
Wycombe Aircraft Constructors, Ltd., High Wycombe, Bucks "Aircraft, High Wycombe" High Wycombe 84.

Airships—

Airships, Ltd., High Street, Merton Wimbledon 1314
Short Bros., Rochester, Eastchurch, and Whitehall House, S.W. "Tested, Phone, London" Regent 378
C. G. Spencer and Sons, Ltd (see under "Balloons")

Aluminium Castings (Sand and Die)

Coan, R. W., 219, Goswell Road, London, E.C.1 "Krankases, Isling, London." City 5840.

Balloons—

C. G. Spencer and Sons, Ltd., 504, Highbury Grove, N.5 "Aeronaut, London" Dalston 1293.

Bent Timber Parts—

Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Euspare, London" Museum 490
Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough" Market Harborough 13
The Atlas Bedstead Company, Bilston "Atlas, Bilston" Phone No. 8 and 51.

Bearings (Etonia Cast Phosphor Bronze)

Yorkshire Engineering Supplies, Ltd., Wortley, Leeds "Yes, Leeds" Central 5027

Blowpipes (Oxy-Acetylene)—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1 "Flamma, Vic, London." Vic. 4830
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." Vic. 3540 (3 lines).

Books (Aero Engines).

Dykes' Auto Encyclopedia, Gillam Dome Buildings, Richmond, Surrey

Buildings—

Boulton & Paul, Ltd., Rose Lane, Norwich "Aviation, Norwich" Norwich 851.
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.
Palmer, T. W., & Co., Church Road, Merton Abbeys, Surrey Wimbledon 1333
Rubery, Owen, & Co., Darlaston, South Staffs

Cable Coverings and Cable Controls—

The Bowden Brake Co., Ltd., Tyseley, Birmingham "Bowden, Acock's Green" Acock's Green 103 & 104
Herbert Terry & Sons, Ltd., Redditch "Springs, Redditch" Redditch 61.

Carburettors—

Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2 Victoria 4670

Casein—

Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C.3. "Suricodon, Fen, London." Avenue 34 and 35

Celluloid (Non-Flam.)—

Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London" Central 1506-7.

Clothing—

Burberrys, Haymarket, S.W.1.
Regent 2165
Dunhill's, Ltd., Euston Road, N.W.1. "Dunsend, London." North 3405-6

Component Parts—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (4 lines).
Central Aircraft Co., High Road, Kilburn, N.W.6 "Aviduction, Phone, London" Hampstead 4403 & 4404
P.D.V. Aircraft Co., Ltd., Princes Street, Richmond. "Acros, Richmond" Richmond 1681
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England "Thompson Bros., Bilston." Bilston 10.

Cords, Tapes, and Threads—

MacLennan, J., & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Dopes—

British Aeroplane Varnish Co., Ltd., 166, Piccadilly, W.1. "Tetrafree, Piccy, London" Gerrard 2312.
British Cellulose Co., 8, Waterloo Place, S.W.1 "Cellutate, London" Regent 4046.
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1 "Ridlespren, Piccy, London" Gerrard 280
Cellon, Ltd., 22, Cork Street, London, W.1 "Ajawb, Reg, London" Gerrard 440.

Engines and Parts—

Allen, W. H., & Co., Ltd., Bedford. "Pump, Bedford." Bedford No. 1.
Arrol-Johnston, Ltd., Dumfries. "Mocar, Dumfries" Dumfries 281-282.
Beardmore Aero Eng., Ltd., 122, Great Portland Street, W.1. "Beardmore, London." Gerrard 238
Dudbridge Iron Works, Ltd. (Salmson), 85, Victoria Street, London, S.W.1. "Aerolight, Vic, London" Vic 7020
Gordon Watney & Co., Ltd., Weybridge. "Mercedès, Weybridge" Weybridge 550 (7 lines).

Engines and Parts (continued)—

Green Engine Co., Ltd., Twickenham Richmond 1203
Gwynnes, Ltd., Hammersmith, W. "Gwynne, Hammersmith" Hammersmith 1910
Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London" Gerrard 8920
Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1 "Rollrad, London" Gerrard 1634-5-6
Sunbeam Motor Car Co., Ltd., Wolverhampton "Moorfield, Wolverhampton." Wolverhampton 685
The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1 "Elevenfold, London." Walthamstow 811 (2 lines).
Walton Motors, Ltd., Walton-on-Thames "Motors, Walton-on-Thames" Walton-on-Thames 220

Electrical Accessories—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2267; London Wall 1504
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1 "Installing, Eusroad, London." Museum 70
Premier Electric Heaters, Ltd., 258, 259, and 260, Bradford Street, Birmingham. "Fahrenheit, Birmingham" Midland 981
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10 "Rodynalite, Phone, London" Willesden 2480

Electric Cables—

E. Kalker and Co., Coventry "Kalker, Coventry" Coventry 248
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2267; London Wall 1564

Electric Lighting and Power—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2267; London Wall 1564
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1 "Installing, Eusroad" Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—

W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham" Birmingham 3622 Central (3 lines)

Flare Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flexible Shafts—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61

Fluxes—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools—

Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth "Etches, Winton" Bournemouth 1160

Furniture (Office)—

Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2 London Wall 573 and 6179

Galvanising—

Boulton & Paul, Ltd., Rose Lane, Norwich "Aviation, Norwich." Norwich 851.

Gauges—

J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17.

Gears—

Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham. "Mosgear, Birmingham" East 407.

Glue—

Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Begecolin, Cannon, London." City 1206
Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Phone, London" Avenue 4611-2.
Mendine Co., 8, Arthur Street, E.C. Bank 6873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3.

Goggles—

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1 "Shatterlys, Piccy, London" Regent 1340

Hack Saw Blades and Machines—

Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London" London Wall 1880



Buyers' Guide

Heating and Ventilating—

Chas. P. Kinnell & Co., Ltd., 65 & 65a, Southwark Street, London, S.E.1 "Kinnell, London" Hop 372 (2 lines)
Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4 "Sturtevant, London." Central 7121 (6 lines).
The Thames Bank (Blackfriars) Iron Co., Ltd., Upper Ground Street, London, S.E.1. "Hot Water, Friars, London" Hop 703.

Hollow Spars—

McGruer Rentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London" Hop 718

Instruments—

British Wright Co., Ltd., 33, Chancery Lane, W.C.2 Holborn 1108

Instruments (Scientific, Altimeters, etc.)—

The Cambridge Scientific Instrument Co., Ltd., Cambridge "Instrument, Cambridge" Cambridge 642
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17 "Anicroid, Phone, London" Walthamstow 180

Leather for Aeroplanes—

George Angus and Co., Ltd. Newcastle-on-Tyne City 72 Central 956-7. Quayside City 73.

Leather Cloth—

New Pegamoid, Ltd., 134, Queen Victoria Street, London "Pegamoid, Cent, London." City 6703 (2 lines)

Magneto Driving Pieces—

Herbert Terry & Sons, Ltd., Redditch "Springs, Redditch." Redditch 61.

Magnetos—

The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1 "Vicksmag, Phone, London" Museum 430
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry" Coventry 278
The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry" Coventry 1008-1009

Metal Casement Manufacturers—

Henry Hope and Sons, Ltd., 55, Lionel Street, Birmingham "Conservatory, Birmingham." Central 999 (2 lines).

Metal Manufacturers—

Clifford, Chas., & Sons, Ltd., Birmingham "Clifford, Birmingham." Central 42-43. Avenue 1432

Metals in General—

Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London." City 6342.

Metal Parts and Fittings—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4959.
Aircraft Supplies Co., Ltd., Ascot House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton 1041.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Lombard Rim and Tube Co., Lombard Street, Birmingham "Lombardic, Birmingham." Midland 211 (2 lines)
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing Eusroad, London." Museum 70.
Mountford, Fredk., Lt., Lifford, Birmingham. "Fremo, Birmingham" King's Norton 261.
Rubery Owen & Co., Darlaston, South Staffs
Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1 "Selsero, Phone, London" Regent 1181
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London" Willesden 2480

Metal Parts and Fittings (continued)

Thompson Bros., Ltd., Bradley, Bilston "Thompson Bros., Bilston" Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10

Metal Shearing Tools—

Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford." Keynsham 21.

Metric Bolts—

Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415
Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—

Anderson, D., & Son, Ltd. (Roofs) Belfast. "Anderson, Belfast." Belfast 4033-4034-4035
Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London" Willesden 2400 (3 lines)
British Metal (Kingston), Ltd., Kingston-on-Thames
Brown Bros., Ltd., Great Eastern Street, E.C.1 "Imbrowned, Betbroad, London" London Wall 6300
Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham" Central 793.
MacLennan, J., & Co., 30, Newgate Street, E.C.1., and at Glasgow Tapes, Cords and Threads City 3115

Motor Cars—

Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries" Dumfries 281-282
Mann, Egerton & Co., Ltd., 374/387, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines)

Nameplates and Labels—

British Metal (Kingston), Ltd., Kingston-on-Thames
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing"

Observation Panels—

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340

Oils—

C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2 "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—

E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London" London Wall 5266-5267.
C. G. Spencer and Sons, Ltd. (See under "Balloons").

Piston Rings—

British Chuck & Piston Ring Co., Coventry "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149
Allen & Simmonds, Ltd., Reading.

Presswork—

Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch "Springs, Redditch." Redditch 61.

Propellers—

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds" 24274 Leeds.
The Pegasus Aircraft Co., Ltd., Totterdown Street, Tooting, S.W.17 Streatham 1242.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8517
Westland Aircraft, Yeovil. "Aircraft, Yeovil" Yeovil 129

Propeller Cases—

The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—

The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26

Radiators—

Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4326

Rigging for Aircraft—

Cradock, Geo., & Co., Ltd., Wakefield, England "Cradock, Wakefield" Wakefield 466

Rubber Tubing & Accessories—

Hancock, James, Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Mastucator, Isling, London" City 3811 and 3812.

Safety Belts—

C. H. Holmes and Son, 38, Albert Street, Manchester. "Semloh, Manchester" City 4432.

Screw-driving Machines—

Russell Bros. (Redditch), Ltd., Littleworth, Redditch "Invertors, Redditch" Redditch 74.

Seaplane Manufacturers—

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).
Mann, Egerton & Co., Ltd., Norwich "Motors, Norwich" Norwich 482 (4 lines).
Short Bros., Rochester "Seaplanes, Rochester" Chatham 627.
Supermarine Aviation Co., Ltd., Southampton "Supermarine, Southampton" Southampton 1337.

Seats for Aeroplanes—

Bowser, E., 50, Park Lane, Leeds. Leeds 21953.

Searchlights & Landing Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London" 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10 "Rodynalite, Phone, London" Willesden 2480

Shackles—

British Gold Shell Ring Co., Ltd., Hounslow, Middlesex "Golshel, Hounslow" Hounslow 254

Sheet Metal Pressings—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury" Oldbury 111 (3 lines).
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds "Propellors, Leeds." Roundhay 345
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham "Brisk Bham" Central 550
British Metal (Kingston), Ltd., Kingston-on-Thames
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs

Sheet Metal Work—

The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London" Vic 4830
British Metal (Kingston), Ltd., Kingston-on-Thames [Staffs
Rubery Owen & Co., Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selsero, Phone, London." Regent 1181.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Sparking Plugs—

Lodge Sparking Plug Co., Ltd., Rugby. "Igniter, Rugby." Rugby 235.
Ripault, Leo. & Co., Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

Springs—

Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Steel—

Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Firth, Thos., & Sons, Sheffield. "Firth, Sheffield." Sheffield 3230 to 3237.
Nicklin, Bernard & Co., Birmingham "Bernico, Birmingham" Smithwick 224

Steel Stamps and Markings—

John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines)

Taper Pins—

Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham "Fremo, Birmingham" Kings Norton 261-262

Tapes and Smallwares—

MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow City 3115.

BUYERS' GUIDE cont. on next page.

"The Aeroplane" Buyers' Guide.—*continued.*

Timber—
Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526.
Hopton & Sons, George Street, Euston Square, London. N.W.1. "Hoptons, Eusquare, London." Museum 496.
Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.

Time Recorders—
Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles— Staffs.
Rubery Owen & Co., Darlaston, South Staffs.
Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W "Installing, Euston road." Museum 70 (4 lines).

Tyres and Wheels—
The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent." Gerrard 1214 (5 lines).

Undercarriages—
Thompson Bros (Bilston), Ltd, Bradley, Bilston, England. "Thompson Bros Bilston" Bilston 10.

Varnishes—
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1 "Ridleypren, Piccy, London" Gerrard 280.
Robt. Ingham Clark and Co., Ltd, West Ham Abbey, E.15. East 955.

Varnishes (continued)—
Harland, W., & Son, Merton, London, S.W.19 "Harland, Wimbledon 45." Wimbledon 15 and 1395.
Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—
Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95.

Washers— Avenue. 1432.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Watchmakers and Jewellers—
(Silver Models)—
Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines).

Welding and Cutting Plant—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma Vic, London." Vic 4830
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London" 3540 Victoria (3 lines)

Welding Repairs—
Barimar, Ltd, 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines)

Wind Shields—
Auster, Ltd., 133, Long Acre, W.C. "Winflector, London." Regent 5910.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Wire Gauze—
Greening, N., & Sons, Ltd., 16, Finsbury Street, London, E.C.2. "Setscrew, Finsquare, London." London Wall 1082.

Wires and Cables—
Bruntons, Musselburgh, Scotland. "Wiremill, Musselburgh." Musselburgh 28.
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466 (3 lines).

Wirework—
Terry, Herbert, & Sons Ltd., Redditch. "Springs, Redditch." Redditch 61.

Woodworking Machinery—
Robinson, Thomas, & Son, Ltd., Rochdale. "Robinson, Rochdale." Rochdale 467.
Sagar, J., & Co., Ltd., Halifax. "Sawtooth, Halifax." Halifax 136.
Wadkin & Co., Leicester. "Woodworker, Leicester." Leicester 3614.

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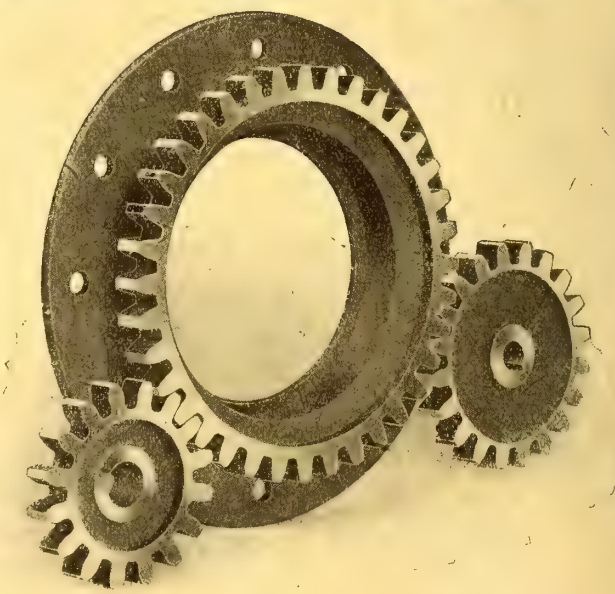
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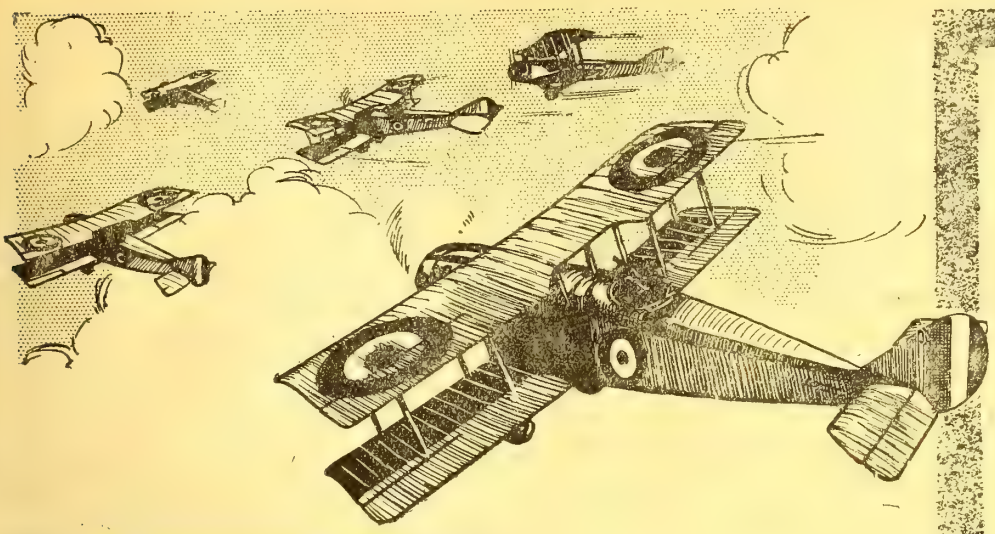
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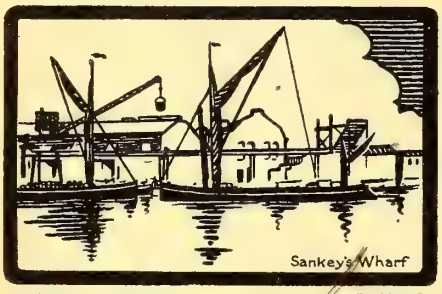
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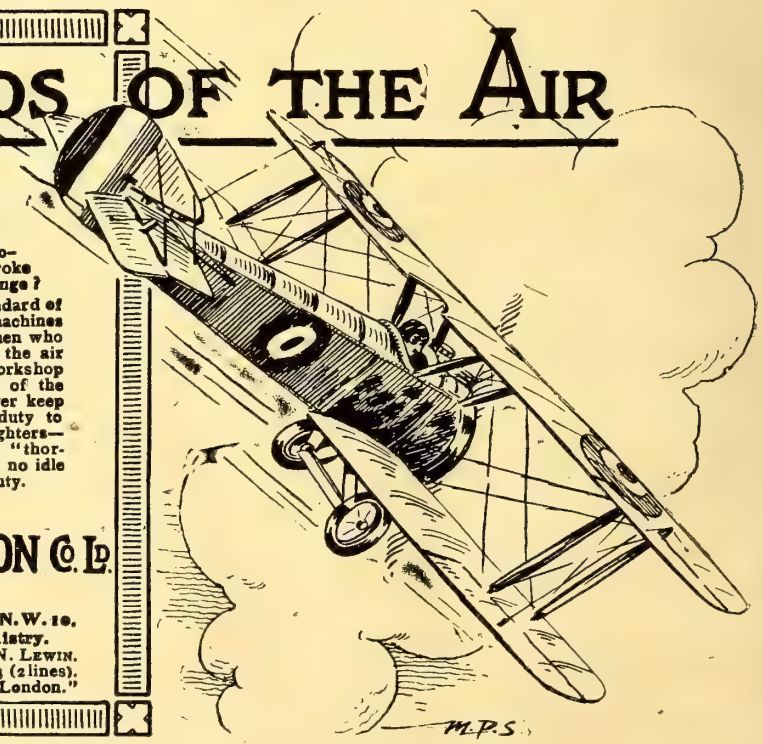
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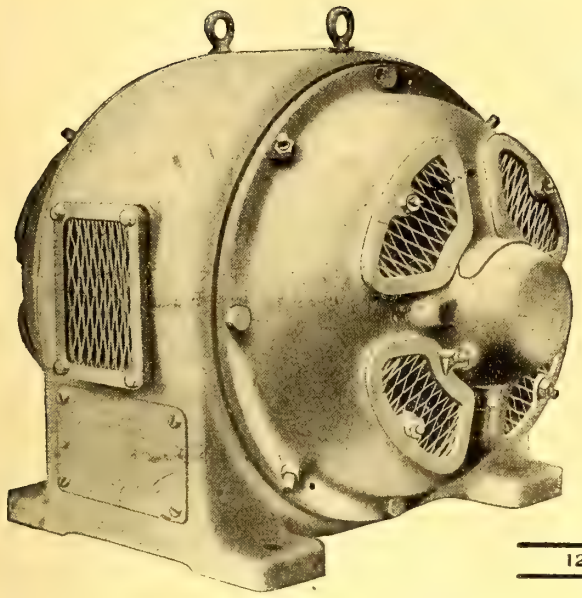


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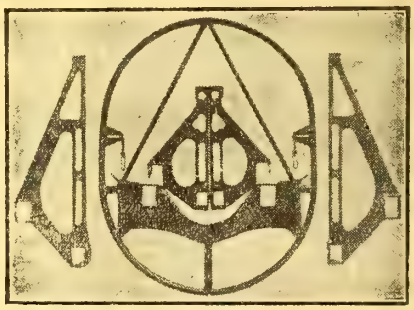
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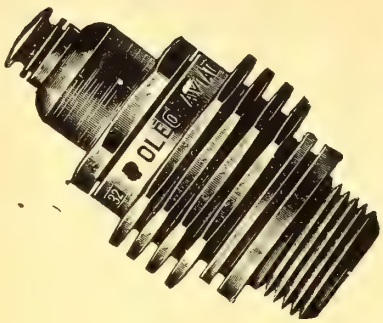
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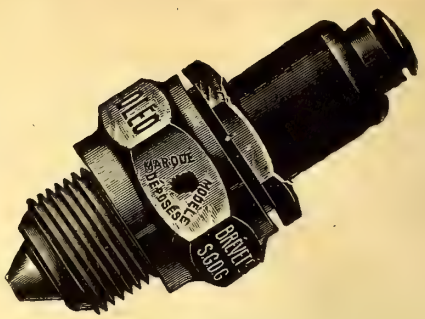
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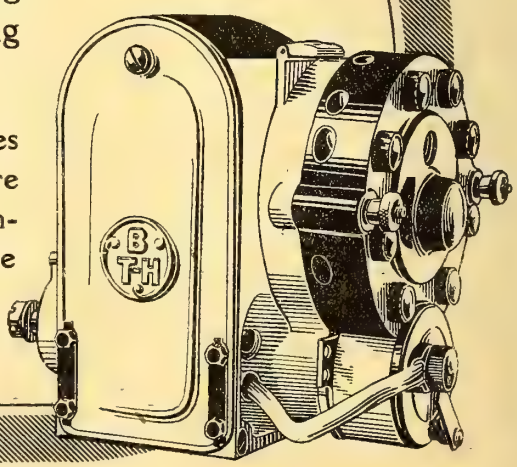
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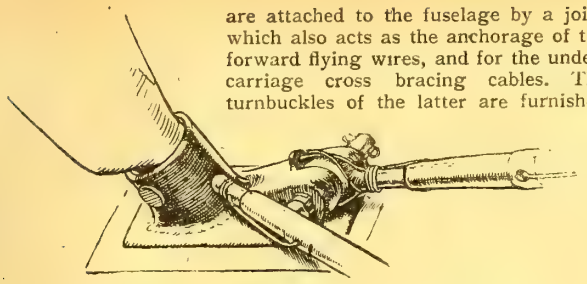


Fig. 3.

are attached to the fuselage by a joint which also acts as the anchorage of the forward flying wires, and for the undercarriage cross bracing cables. The turnbuckles of the latter are furnished with spherical heads which are carried in cups pressed out of the lug plate. The actual junction of the strut and the socket is formed by a ball and cup.

The shock absorbers are triple coil springs, enclosed in a fabric covering.

The wheels are 760 x 100, and are covered in with fabric discs in the usual manner.

ENGINE MOUNTING.

The engine is carried on I section bearers, bracketed to vertical members of the forward part of the fuselage. One of these bearers is visible through the inspection door, which is shown open in Fig. 5.

ENGINE.

The motor fitted is a 180 h.p. Opel upon which a separate report is issued. It is of standard 6-cylinder vertical type, and is designed on the accepted German lines.

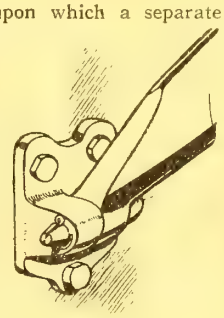


Fig. 4.

EMPENNAGE.

One of the most characteristic features of the Hannoveraner machine is the biplane tail, of which the span is unusually small. The upper plane is mounted on the fin, which in itself forms a streamline extension of the rearward portion of the fuselage. As in previous German types which have been described, the merging of the stream into the fin is very neatly carried out. The object of the biplane tail is evidently to mitigate the masking effect of the tail on the movable gun, as there is evidence that the gunner habitually fires through the tail at hostile machines approaching from behind. The bottom plane is covered with 1-16 in. three-plywood throughout, and the top plane with fabric. The fin is likewise covered with three-ply on which is applied a layer of fabric, both upper and lower planes are fixed, there being no means of tail adjustment provided.

Whereas the upper plane is flat and thin, the bottom plane is heavily cambered top and bottom. It is fitted with barbs to prevent mechanics lifting the machine by the tail. An inclined interplane strut is fitted on either side of the fin. This is of steel tube of approximately streamline section, and each cell so formed is furnished with cross bracing wires. That portion of the fin which extends below the fuselage is used to provide the mounting for the tail skid, the general arrangement of the tail being shown in Photograph D. The tail skid is not provided with a swivel mounting, but has a solid metal shoe of good dimensions with convex underside, allowing the skid to sideslip in answer to the rudder when running on the ground. It is sprung with elastic bands at its forward end.

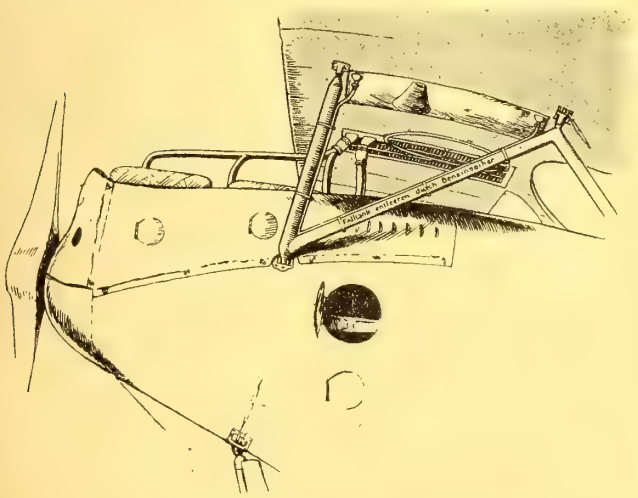


Fig. 5.

The elevators are worked together, and are coupled up as shown in Fig. 8. It will be noticed that this arrangement, in which the upper and lower links are brought to separate pins, and not to a single pin, results in the elevators being worked through slightly different angles, but this differentiation is in practice, of course, inappreciable.

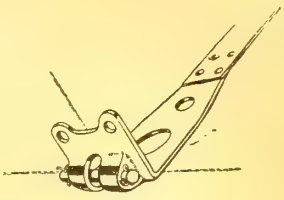


Fig. 6.

CONTROL.

The ailerons are fitted to the top plane only. They measure 7 ft. 9½ ins. long and project at each side about 7 ins. beyond the fixed wing tip. The framework on which they are built consists of light steel tubing. The maximum chord of the aileron is at the wing tip, where it reaches 1 ft. 11 ins., having a minimum chord of 1 ft. 6 ins. at its inner end. A balancing area of approximately 1 sq. ft. is provided forward of the aileron pivot. The aileron control embodies a curved lever passing through a slot in the main plane immediately ahead of the aileron. From each end of this lever, which forms part of the aileron framework,

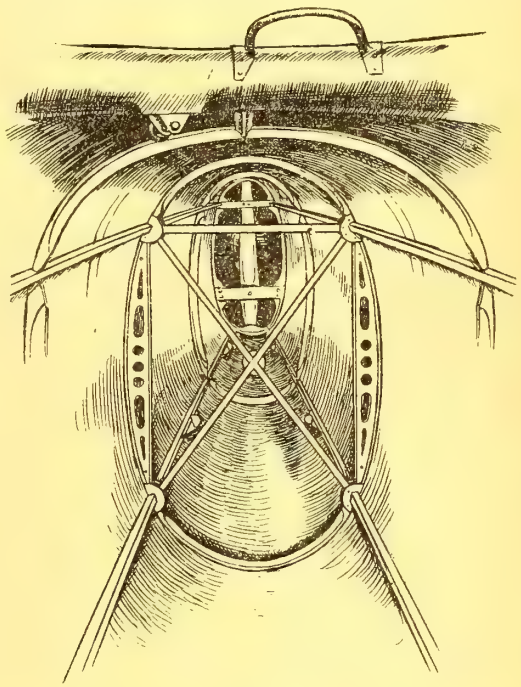


Fig. 7.

wires are taken to pulleys on the lower wing, whence they proceed in guides behind the leading wing spar to the control stick, to which they are attached in such a manner that each aileron is actuated positively by a direct pull from the control stick, and not through the medium of a balancing wire.

The control lever is of a type not previously found in German models. As shown in Fig. 9, it is provided with two inclined wooden handles, one of which, on the left side, is not fixed, but is carried by a tubular sleeve which is capable of rotation around the control stick tube. By moving this lever circumferentially, the throttle is controlled by means of a crank which is carried at the bottom end of the control stick sleeve. The throttle lever is fitted with a ratchet operated by a grip lever, as shown in the sketch.

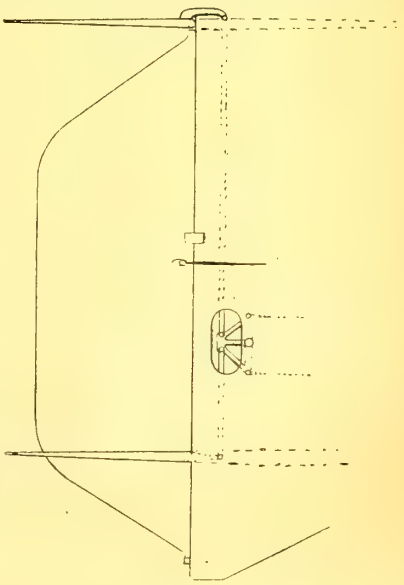
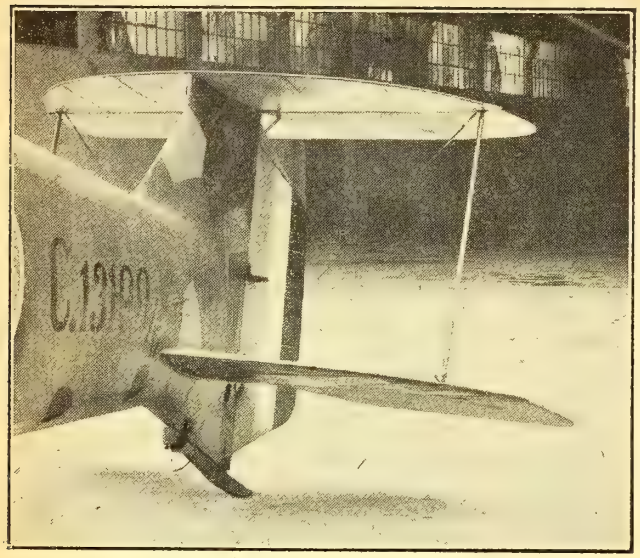


Fig. 8.



(D).—Tail of the Hannoveraner.

The elevators are controlled by the usual double-ended cranks, the wires being carried down the fuselage in small tubular guides.

The rudder bar is built up of welded sheet steel, and is fitted with the usual heel rests. It is placed forward of the bulkhead, which provides a dashboard in front of the pilot's seat, and on each side, as shown in sketch, Fig. 10, sheet metal casings are provided for the pilot's feet. This construction, which is, of course, dictated by considerations of body length, has the advantage of preventing the draught which usually comes from the underside of the pilot's cockpit.

The rudder control wires pass over pulleys on either side of the base of the cockpit, and thence down the fuselage to the rudder.

Engine Control.

The main throttle control is as described above. In addition, however, there is an independent throttle control, consisting of a push rod carried through an opening on the dashboard. Either control can be used independently.

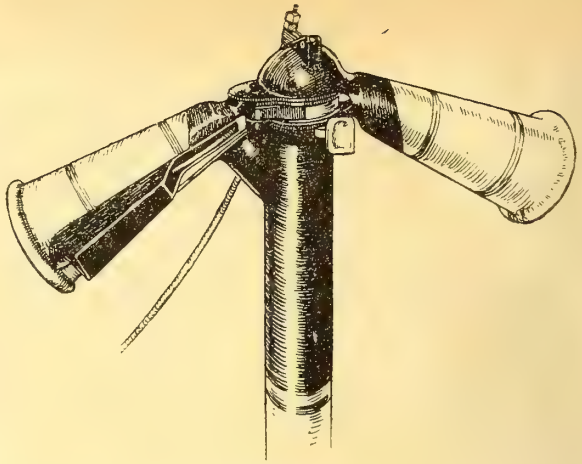


Fig. 9.

The ignition advance lever is similarly arranged, and consists of a rod thrust through a plate on the dashboard and terminating in a small fibre handle.

Radiator.

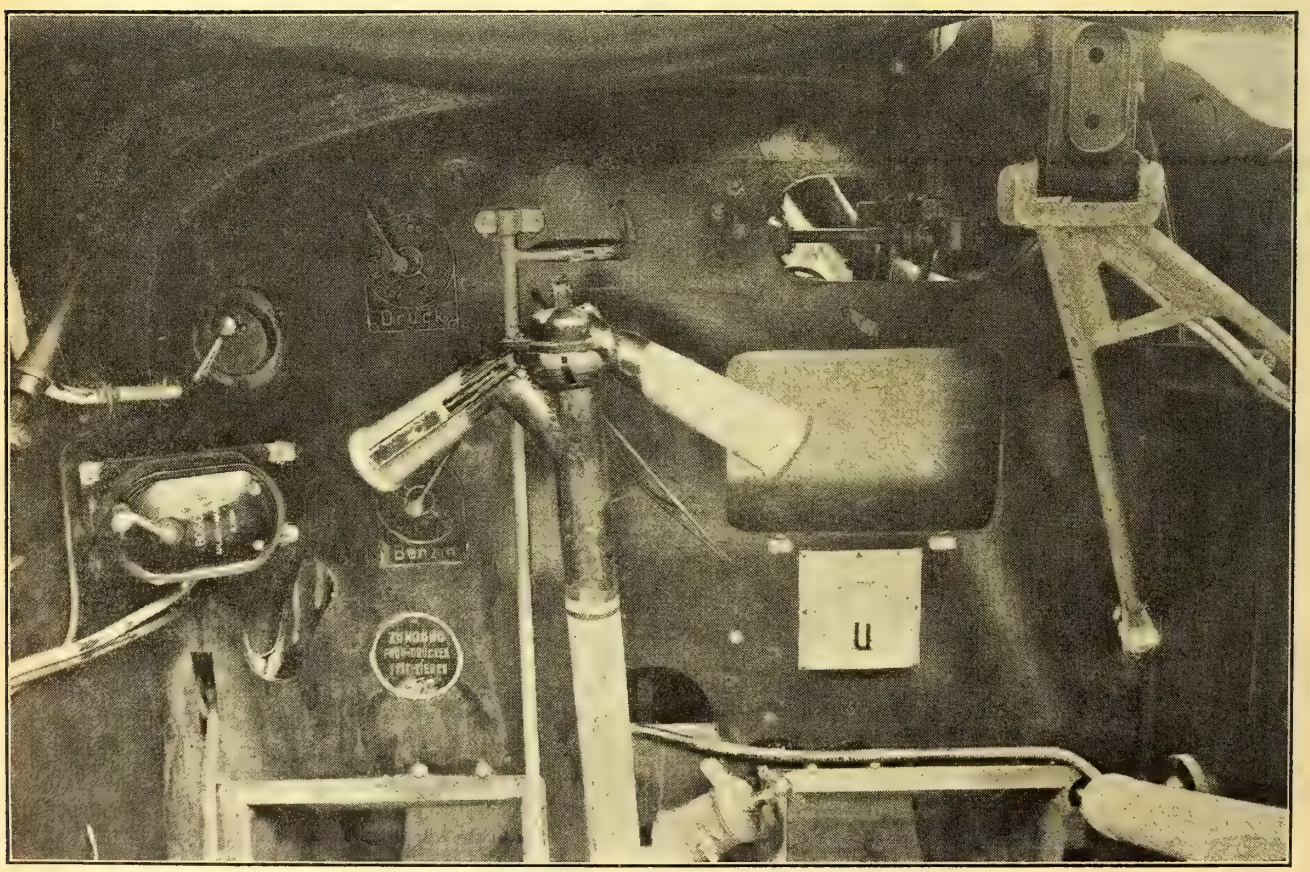
In accordance with the usual practice characteristic of German machines of this type, the radiator forms a part of the upper plane centre section. It has an area of 27 ins. by 16 ins. by in. deep, and consists of the usual oval section horizontal tubes.

Underneath the radiator and attached to the underside of the centre section is a circular grooved ring. This is evidently intended to carry a semicircular disc, which is pivoted in a bearing fixed in the side of the radiator, and the object of which is to act as a controllable radiator shutter.

Petrol System.

The main petrol tank has a capacity of 30 gallons, and is fitted under the pilot's seat. It is circular in section. On the left-hand side of the top plane centre section close beside the radiator is a subsidiary tank, feeding by gravity to the carburettor. This is used for starting-up purposes. On its underside it carries a simple form of level indicator.

The main tank feeds the carburettor by air pressure, which is normally .25 grs. per sq. cm.



(E).—The Pilot's Office in the Hannoveraner Biplane.



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A hand air pump is mounted on the right-hand side of the pilot's cockpit, and as shown in sketch, Fig. 11, is fitted with a long handle so as to be worked by either the pilot or the observer.

The main tank is furnished with a Maximall petrol level gauge employing the principle of a float operating a dial by means of a cable passing over pulleys, and enclosed in a sealed piping system.

Provision is made for filling the gravity tank from the main tank by means of a semi-rotary hand pump mounted on the left side of the pilot's seat. Taps are arranged so that the carburettors can be fed from either tank.

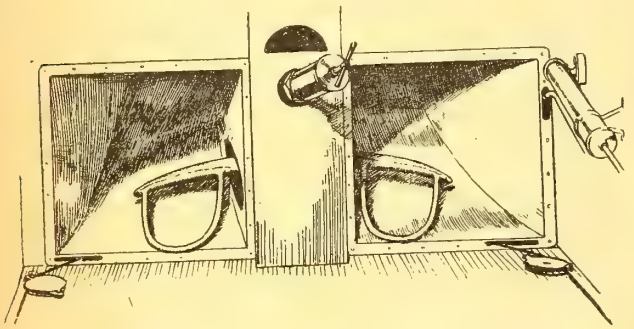


Fig. 10.

Oil.

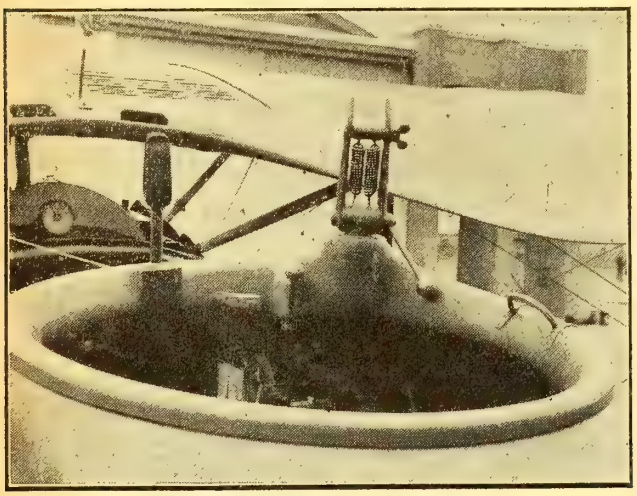
This is contained in a tank on the starboard side of the engine. A glass level gauge is built into the side of the tank, and the covering of the fuselage is cut away at this point, so that the oil level is easily visible.

Wireless.

No wireless fittings were found in this machine, but it is adapted to take the apparatus when required.

On the rear end of the engine crankshaft is a driving pulley, which can be brought into action by a clutch operated from the observer's seat. Fig. 11A.

A bracket fitted on the port side of the engine over the rudder bar is evidently intended to carry the dynamo. The latter would



(F).—Passenger's Gun-Ring.

also provide current for heating, plugs for this purpose being arranged conveniently to both pilot and observer.

Observer's Cockpit.

The observer is provided with a spring-up folding seat, which is so low that when seated the observer has his head level with the gun mounting. A sketch of this seat is given in Fig. 12.

Provision is made for the use of a camera through a hole in the bottom of the cock-pit. This is normally covered by a sliding panel, which is operated by a return wire running over a pulley. The label shown in Fig. 13 carries the following inscription :—

"This machine is arranged for photographic utensils (apparatus, implements, etc., not camera) of the photographic department. The cross tubes in the observer's cockpit low down in front are easily taken down."

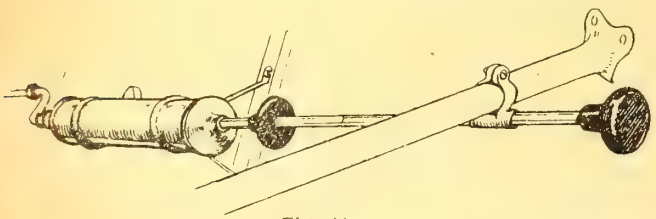
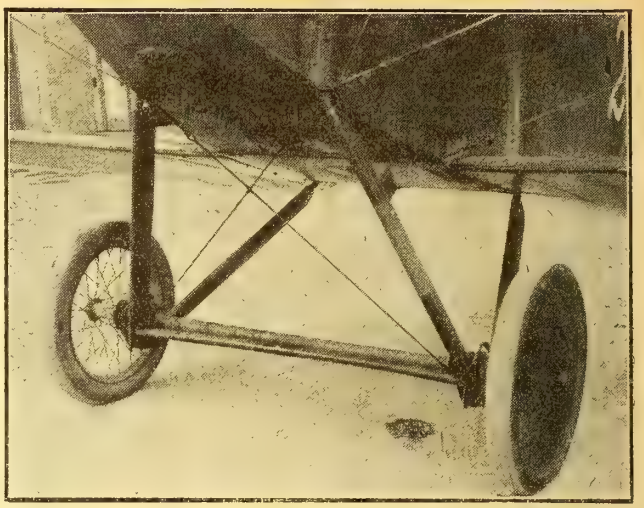


Fig. 11.



(G).—Undercarriage of the Hannoveraner.

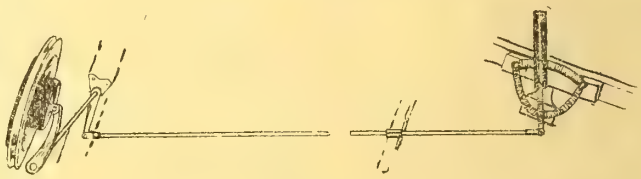


Fig. 11a.

The clips for holding these cross tubes are shown in Fig. 13.

A small board about 12 ins. square can be let down from the back of the pilot's seat for writing purposes, and shuts up out of the way when not required.

Clips are provided for carrying maps, etc.

On the right-hand side of the observer's cockpit is a small pull lever, shown in Fig. 14. In its normal position this rod projects through the side of the fuselage, and supports on its outside the hinged bottom of a series of metal pockets, made as shown in Fig. 15. It is not quite clear what purpose is answered by this fitting. Whatever the pockets contain would be simultaneously discharged on pulling the lever.

Instruments.

An air speed indicator of the revolving anemometer type, by

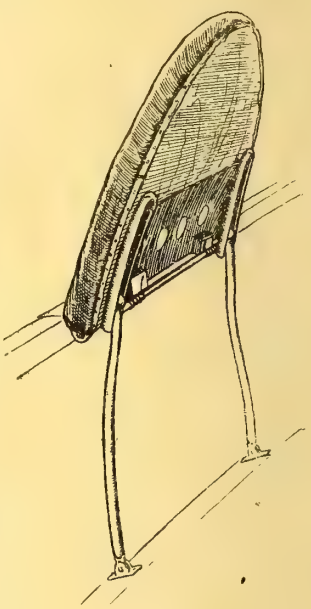


Fig. 12.

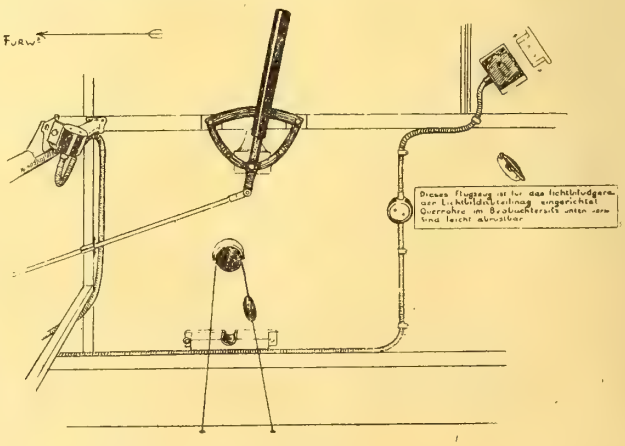


Fig. 13.

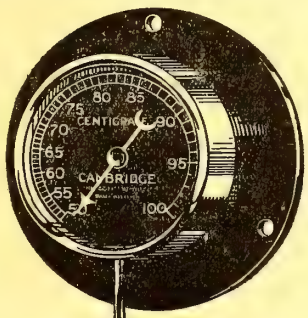
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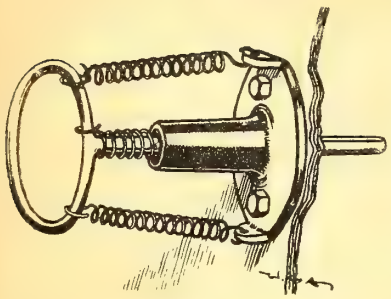


Fig. 14.

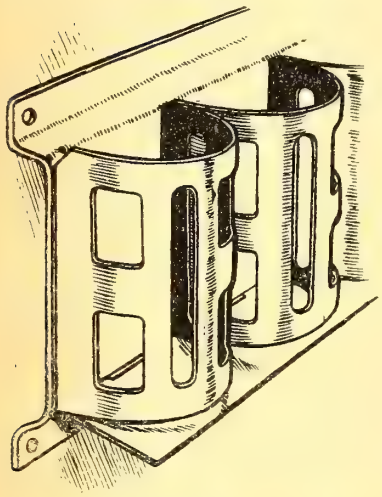


Fig. 15.

Morell, of Leipzig, is fitted on the forward left-hand wing strut, where it is readily visible by both the pilot and the observer. The mounting and general design of this instrument is shown in the photograph I.

With this exception, the instruments fitted on the machine, comprising engine revolution counter, compass, barometer, etc., are all of standard type, and have already been reported upon.

Propeller.

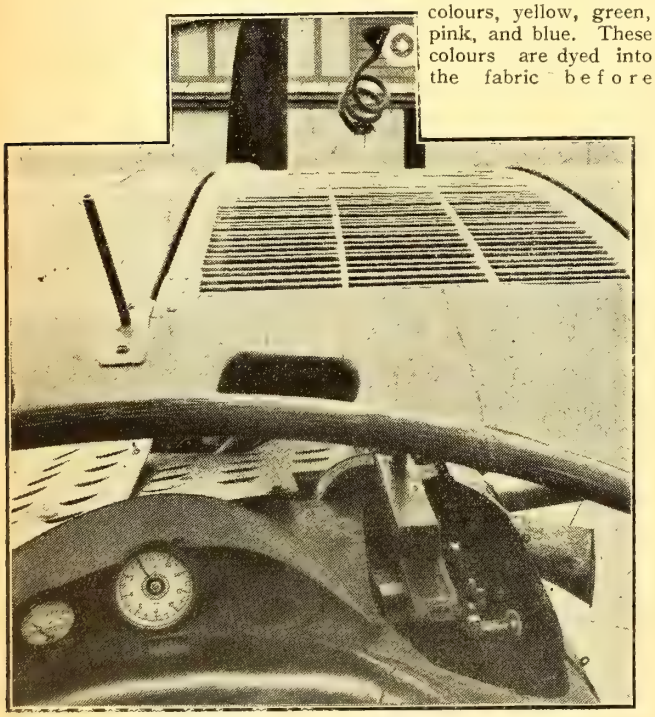
This is stamped 180 P.S. Argus. It is composed of laminations alternately ash and some species of soft pine.

Fabric and Dope.

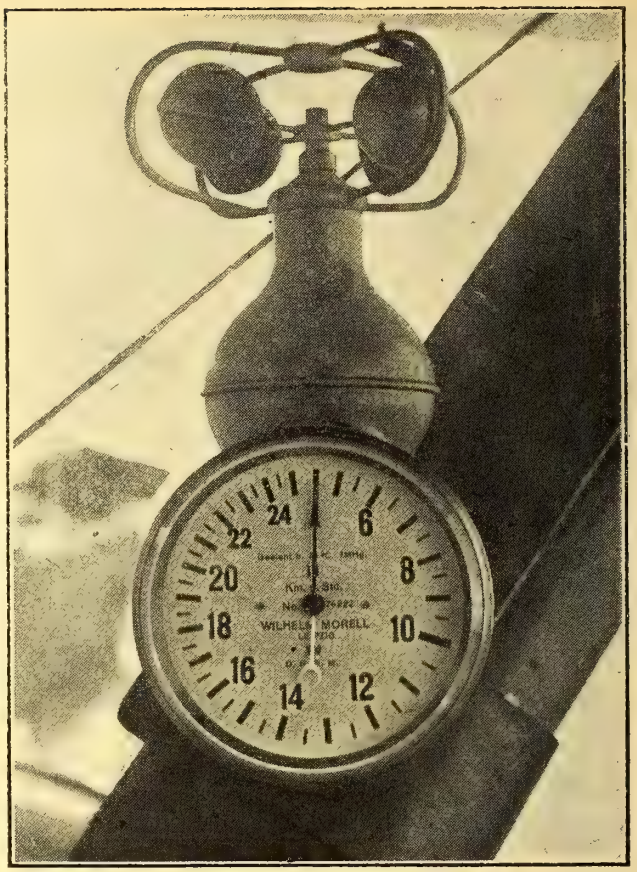
Both appear to be of good quality, and are up to the usual German standard.

Camouflage.

As will be seen from the photographs, the main planes are camouflaged with the usual mosaic of colours, yellow, green, pink, and blue. These colours are dyed into the fabric before doping, and a similar decoration is painted on the fabric of the fuselage, which is generally dark-greenish in colour.



(H).—The Radiator and Gun-Emplacement.



(I).—The Speed Indicator.

Armament.

The armament consists of a Spandau gun, firing forward through the propeller under the control of the pilot, and a movable gun on a wooden mounting under the control of the observer. The fixed gun is placed close to the exhaust ports of the engine. The mounting of the movable gun is clearly shown in photograph F and in Fig. 16.

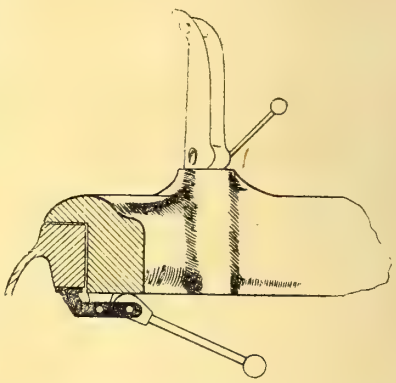


Fig. 16.

W. G. A. (Ap.D.L.),
July, 1918.

J. G. WEIR,
Lt.-Col.,
Controller, Technical Department.

THE HANDLEY PAGE SPORTS.

Favoured with glorious weather, the second annual sports meeting, arranged by the Athletic and Social Club connected with Handley Page, Ltd., took place on their own ground on August 24th. There was a very big attendance, and for the amusement of the thousands who assembled the able committee arranged a fine programme. A number of wounded soldiers were present, and others in attendance included Mr. and Mrs. F. Handley Page, Messrs. F. fforde and W. Finch.

The Child's Hill Prize Band under the efficient guidance of Mr C. J. Marchant, L.R.A.M., rendered selections of music at intervals, and also played for dancing in the evening, which was thoroughly enjoyed.

Tea was provided for the visitors in a large marquee. Mr. Jones, the organiser of the affair, having cordially welcomed so many friends to their sports' festival, called upon Mr. Meredith, the works manager, who proposed a vote of thanks to Mr. and Mrs. F. Handley Page for their presence. They had always taken great interest in, and shown much enthusiasm for, all the social events connected with the works, and they were glad to see them present. Mr. Handley Page said that he was glad to see so many present, and hoped that all of them would have a good time. He was very pleased to be able to help the club. A vote of thanks was also accorded to Mr. Page for providing the prizes, which were of a particularly valuable character, and were charmingly presented by Mrs. Handley Page, who was received with cheers.

A concert and dance finished up a most successful and enjoyable event.

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AERO ENGINES

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WALTON MOTORS, LTD.
WALTON-ON-THAMES.

THE PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by THE AEROPLANE from the current Official Patents Records.

PATENT APPLICATIONS.

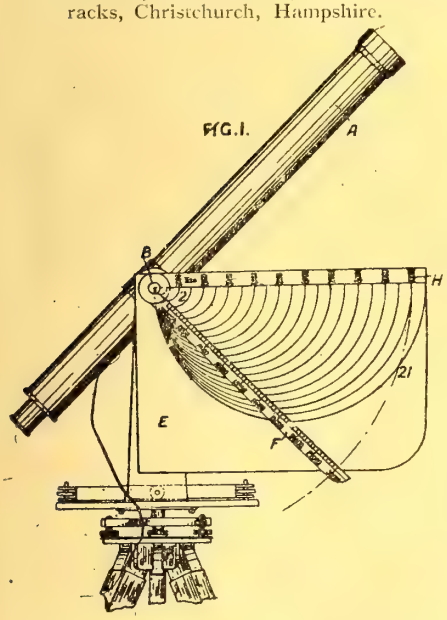
Ans, C. d'. Means to prevent petrol tanks of aircraft catching fire and leaking when pierced by bullets, etc. No. 13849. Aug. 26th.
Beatty, G. W. Ribs, etc., of aircraft. No. 13843. Aug. 26th.
Boulton & Paul. Loading and discharging devices for aircraft. No. 13913. Aug. 27th.
Boulton & Paul. Aeroplanes. No. 14145. Aug. 31st.
Broadsmith, H. E. Aircraft. No. 13852. Aug. 26th.
Burnett, F. J. Aircraft. No. 13963. Aug. 28th.
Davies, C. H. Aircraft. No. 14133. Aug. 30th.
Eagles, G. A. Flying-machines. No. 14082. Aug. 30th.
France, G. Aeroplanes, etc. No. 13943. Aug. 28th.
France, G. Aeroplanes, etc. No. 13944. Aug. 28th.
Greenacre, C. Level-indicator for aircraft. No. 10462. Aug. 30th.
Hardy, C. T. Apparatus for calculating courses of ships in water or air. No. 14052. Aug. 29th.
Harvey, H. Struts or stays for aeroplanes. No. 13948. Aug. 28th.
Haynes, E. F. Aerial bombs. No. 14141. Aug. 31st.
Hoddinott, R. U. Aerial course corrector. No. 13911. Aug. 27th.
Macfarlane, H. Aeroplanes etc. No. 14081. Aug. 30th.
Mutch, A. Flying-machines. No. 13917 Aug. 27th.
Pollard, A. F. C. Aircraft navigation. No. 14135. Aug. 31st.
Rowe, R. F. Toy aeroplanes. No. 14162. Aug. 30th.
Travers, J. L. Flying-boats. No. 14129. Aug. 30th.

COMPLETE SPECIFICATIONS ACCEPTED, PRINTS OF WHICH CAN BE OBTAINED ON AND AFTER SEPTEMBER 19TH, 1918.

118,341. Sept. 4th, 1917. Ashworth, J. Flying-machines.
118,352. Sept. 24th, 1917. Brewer, G., and Spencer, M. H. Air-speed indicator for kite balloons.

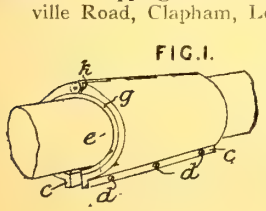
ABRIDGMENTS OF RECENTLY PUBLISHED SPECIFICATIONS.

116,811. Range-finders. ROBINSON, L., 3, Staple Inn, Holborn, London, and BERTHON, A., and SWINDLEHURST, J. E., Barracks, Christchurch, Hampshire.



The range of aircraft, etc., of known height is determined by means of a telescope or other view tube A which is pivoted at B and has attached to it a graduated arm F turning over a plate E marked with semicircles 2 . . . 21, each semicircle passing through the axis of the pivot B and having a common diameter in the form of a scale H. The scale H may be horizontal, as shown, or vertical, the arm F being at right-angles to or parallel to the tube A respectively. The arm F is preferably graduated in feet and the scale H in yards. When making an observation, the semicircle passing through the graduation on the arm F corresponding to the height of the aircraft is followed round to the scale H, and the range is read from the graduation at the end thereof.

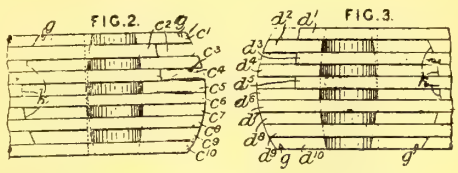
116,863. Stopping leaks in pipes. MEREDITH, T. D., 147, Abbeville Road, Clapham, London.



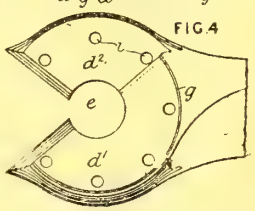
A clip is placed over the damaged pipe *e*, the clip consisting of two parts hinged together, with a flush hinge *k* and lined with a single piece of india-rubber *g*. The clip has flanges *c* which are secured by screws *d*.

116,463. Screw propellers. SCHMUKER, A., 261, Gladstone Avenue, Wood Green, London.

An aircraft propeller is constructed of superposed laminæ, formed of pairs of half-length laminæ having segmental projections c^1 . . . c^{10}, d^1 . . . d^{10} adapted to about to form full-length laminæ,



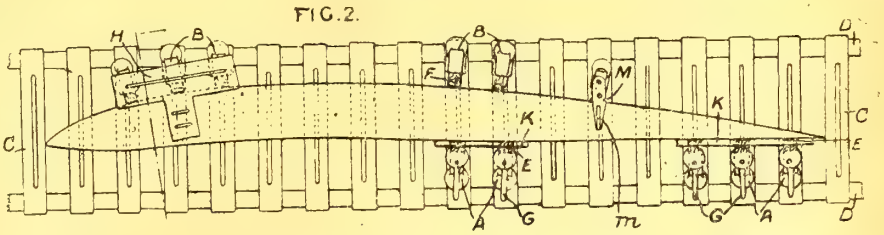
the meeting surfaces of superposed laminæ forming imbricated joints. The segmental projections are shaped so that a central passage *e* for the boss is provided when the parts are assembled. The laminæ are glued together and may be secured additionally by annular discs fitting in grooves *g* in the outer laminæ held in position by bolts passed through the holes *k*. The superposed segmental projections of the laminæ may be shaped to form a barrelled boss and the meeting faces may be bevelled.



116,778. Cramps and clamps. MANN, EGERTON, & Co., 5, Prince of Wales Road, Norwich, and PORTER, S., Langdale, Welbeck Road, Bolton.

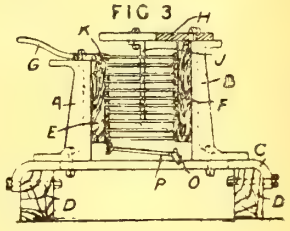
An apparatus for making repetition parts, particularly for securing edge frames to the ribs of aeroplanes, comprises a pair of longitudinal members D secured to a foundation, and provided with a number of slotted holding-down plates C to which are adjustably secured two series of standard, those A of one series being lower than those B of the other series, and one of each series being secured to each plate C. Only a few of the standards are shown in Fig 2. The standards are provided with hard-wood faces E, F, and along the top of the standards A is placed a flexible locking strip K which is operated by a series of eccentrics G to clamp the work between itself and the faces F of the standards B. As shown in its application to ribs of aeroplanes, a rib frame O is placed against the standards B, the web P inserted in the slot of the frame O and the other frame O then placed in position on the web P. The whole is then clamped by the locking strip K. The faces E, F are of sufficient depth to retain a number of ribs as shown in Fig. 3, the ribs being pressed down by each succeeding rib, and finally delivered at the bottom with the glue substantially dry. In order to position the standards accurately with respect to the gaps or holes in the ribs which receive the main spars or stringers of the machine, plates H, M with depending plates or pieces J, *m* are adjustably

FIG.2.



secured to certain of the standards B so that the position of the plates or pieces J, *m* correspond to the position of the gaps or holes. Instead of the work being clamped against the face F, a "former" plate, shaped to correspond with the edge of the work may be secured to the tops of the standards B. A similar plate may be provided on the standards A.

FIG 3

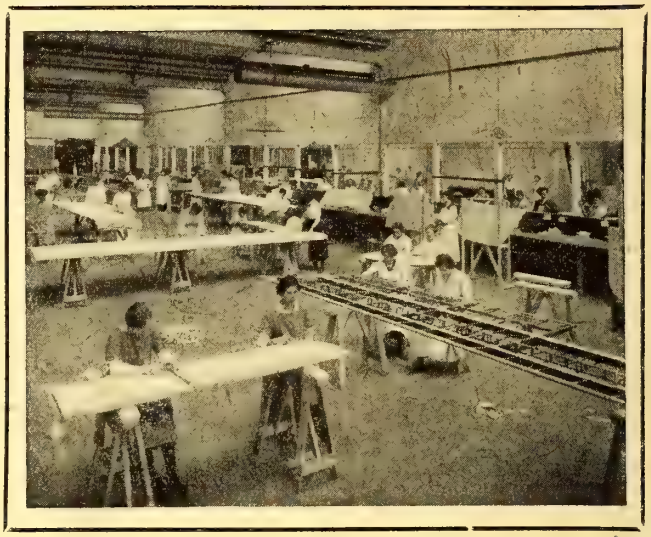


A CHANGE IN POSITION.

Mr. A. Mason, Assistant Works Manager of the Sunbeam Motor Car Company, Ltd., who has been with that firm for the past 8½ years, has joined Guy Motors, Ltd., as Manager of the Buying Department.

Humber

MORE than ever the future will prove that, by reason of having placed our energies and resources at the disposal of the Allied Governments, the name HUMBER on the Car is synonymous with excellence of material and construction.



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THE AIRCRAFT TRADER

MARKET TOPICS.

PRICES ARE FOR QUANTITIES ON USUAL TERMS.

SEPT. 4th, 1918.

COPPER.—Now the price question has been settled and criticism subsided, interest is entirely centred around production, and producers are putting forth every effort to increase the figures considerably during the next few months.

At present, supplies are not difficult to procure. Prices remain unaltered.

TIN.—The position of this market continues to improve, and the hesitancy of buyers referred to in the last report appears to have been justified, prices having fallen to £354, early in August the price was £399.

It is also interesting to observe that even at £354 there are more sellers than buyers. The new purchasing arrangements appear to be bringing the Eastern speculators into line, and further developments are expected.

The output is fairly satisfactory, and although the stocks here are not very large, there is an apparent feeling of confidence that all war demands will be met.

COMPARATIVE PRICES.

To-day (3rd)	£354	0	0	per ton.
Aug. 28th	£364	0	0	per ton.
Aug. 21st	£375	10	0	per ton.
Aug. 2nd	£399	0	0	per ton.
Highest Price, 1917	£309	0	0	per ton.

LEAD.—This market is still tightly controlled, and prices are unchanged. Supplies are, at present, fairly satisfactory.

STEEL.—Supplies continue to give great satisfaction; the holidays, of course, interfered with production, but large stocks of Aircraft Steels are now held, and there is not the slightest fear of a shortage, unless unforeseen difficulties arise. The mills are again working at full pressure now the holidays are over.

Official prices for Aircraft Steels remain unchanged.

TIMBER.—There is very little of interest to report on this market.

The system of control for Hardwoods has not yet been settled, although it is expected that an order will be issued in a few days. The Controllers have so far left manufactured Plywood untouched, and supplies continue to give satisfaction.

Official prices are unaltered.

FABRIC.—The position of Fabric supplies remains the same. Demands are being fairly well met, and there does not appear to be any fear of an immediate shortage, although the position does not give ground for undue optimism. Prices are unaltered.

WOOD SCREWS.—Constructors should note that Guest, Keen and Nettlefolds have reduced their discounts on Wood Screws as follows:—Iron, by 5 per cent.; Brass, by 2½ per cent.

AN ENFORCED MOVE.

Messrs. W. Canning & Co., Electro Platers, Engineers and Manufacturing Chemists, whose Snow Hill Engineering Works, Birmingham, were totally destroyed by fire on August 23rd, having found it impossible to rebuild the Engineering Works without delay, have purchased extensive premises and machinery, as a going concern, at Salop Street, Highgate, Birmingham, formerly in the occupation of Piston Rings, Ltd. Their telephone Nos. are 638 and 2424 Midland, and work has already been resumed.

The Birmingham "Mail" of Aug. 23rd says that damage to the extent of between £20,000 and £25,000 was done at a fire which was discovered early that morning at the premises of W. Canning & Co., of Snow Hill. The fire was first seen by a lock-keeper on the canal side, and he informed a special constable who gave the alarm.

When the fire-brigade arrived in response to a call shortly before one o'clock a range of shopping of two floors was burning fiercely, and it was found necessary to circulate what practically amounted to a brigade call. In all 52 men and 10 machines, under the direction of Chief Officer Tozer, were engaged on the fire, and it was only after two hours' hard work that the main body of the brigade were able to retire.

THE SWIFT AVIATION COMPANY'S ANNUAL OUTING.

The Swift Aviation Company's annual outing was held on Friday, Aug. 30th, the party journeying to Runnymede by launch, and an interesting series of athletic events were run off. The event of the day, the "Swift" Championship, for a silver cup presented by Mr. J. C. Wilson, was won by W. Chandler. The final of the Veterans' Handicap resulted in a dead-heat, and in the final another dead-heat was the verdict after a desperate race. It was decided to give an extra prize for this event.

Mr. C. Smith and Mr. G. Thomas gave prizes for the principal handicaps, the remaining items being subscribed by the employees of the firm. Good entries were obtained for the various events, which were keenly contested.

TO IRISH MANUFACTURERS.

The proprietors of aircraft works in Ireland will be interested to hear that that excellent workshop assistant, the "Tangent Cutter," which is made by Montgomery Smith and Co., of Keynsham, near Bristol, is now handled in Ireland by Mr. Bertie Barrett, of 25-28, Great Strand Street, Dublin.

This is certainly one of the best metal shearing tools in existence, and Irish aircraft workers will be duly impressed by its efficiency when they come to use it. Mr. Barrett hopes to have samples on view at a very early date, and those who are interested in the subject are invited to communicate with him.

ALUMINIUM FACTS AND FIGURES.

Those concerned with the use and manipulation of aluminium and its products cannot fail to be interested in a pocket-book which has been issued by the British Aluminium Co., Ltd., of 109, Queen Victoria Street, E.C.4, which contains a great deal of useful information concerning the physical properties and dimensions of all kinds of worked and unworked aluminium, and data is provided for calculating stresses and electric capacity of aluminium cables, and other electric devices.

To suit the convenience of their clientèle the matter is produced in Spanish as well as in English, and where possible the metric system is employed.

A section of the pocket-book is devoted to practical hints about casting, polishing, finishing, machining, pressing and welding aluminium.

There is also a wealth of other information which space makes it impossible to describe, and bona fide members of the Aircraft Industry should not fail to apply for a copy of the book.

ARROL-JOHNSTON RECORDS.

For the purpose of putting on record the performances of the Arrol-Johnston cars that have been produced under the present management of the concern, Arrol-Johnston, Ltd., Heathall, Dumfries, would very much appreciate any information that would be of assistance to them in this direction.

It is now four years since they produced Mark V. Arrol-Johnston car, and nine years since they produced Mark I. If owners of any Arrol-Johnstons from Mark I. to Mark V. would be good enough to communicate with them, stating the mileage and any other information which this request suggests, of their particular model since it has been in their possession, or if any past owners who, owing to war circumstances, have parted with their cars, would furnish them with facts of a similar nature, the company would sincerely value it.

They believe that appreciative owners of Arrol-Johnston cars will be pleased to co-operate with them in their endeavours to put up for after-the-war consumption evidence showing why the Arrol-Johnston reputation has ever been a good one. It is the intention of Arrol-Johnston to maintain this reputation, as will be revealed in their post-war model, which is now as far advanced as circumstances will allow.

During the whole period of the war Arrol-Johnston production facilities have been placed unreservedly at the disposal of the War Department, and the firm is proud that it has been able to be of such practical assistance to the country. As a matter of fact, Arrol-Johnston were engaged in aero engine production eight months before the famous August, 1914.

WAR WORK BY A HUMBER DRIVER.

Lady motorists have been noted for the good work done by them in connection with the war, and a notable case is that of Mrs. Sydney Powell, who has just returned from the Balkans, where she has driven an ambulance on the Serbian front. In pre-war days, Mrs. Powell participated regularly in motor-driving competitions, using the Humberette and the 10-h.p. Humber car.

MR. SANDOW
ON
Natural & Scientific Nerve-Culture.

THE PHYSICAL BASIS OF STRONG NERVES AND A COOL BRAIN.

The nerves are the strands in the life-line of an airman. What is the secret of strong nerves? What is it that gives a man that sublime calm and confidence in the critical moment—I might even say second—that may decide not only his own fate, but the fate of others dependent upon him? It is not, as some may think, a supernatural gift. The superman in the air, with nerves like finest-tempered steel, is only a superman in physical condition, and that superior physical condition is, I contend, attainable by all, naturally, easily, and pleasantly.

Nerve strength is not to be found in any special food or drink, or medicine, and nervous force can only be generated in the body by the perfect functioning of every other organ, more especially of the organs of respiration, digestion, and elimination. In other words, physical fitness and efficiency are the basic essentials of strong and steady nerves. The three requisites of a well-ordered nervous system are :—

1. Pure air. 2. Good food. 3. Physical exercise.

The two first are ensured, but they cannot be converted into nervous force in sufficient quantity or quality without the latter, and in no other branch of military service is this vital factor so apt to be overlooked. Indeed, I know one leading airman, a pupil of mine, who has been flying for three years, and who has never had an accident or lost a contest in the air, and he attributes his nerve entirely to my system of keeping himself always thoroughly fit, as many airmen who have consulted me declare that they get less physical exercise than any other fighting men, and their nerves suffer in consequence.

"A course of Sandow," as it is colloquially called, is the best tonic an airman can have, as many flying men gladly testify. It means :—

1. Firm muscles—and muscle is only "crystallised function."
2. Sound digestion and a well-nourished nervous system.
3. Deeper and fuller breathing and nerves well oxygenated.
4. Well-oxygenated blood and good circulation.
5. A body, brain, and nervous system harmoniously developed, strengthened, and self-disciplined.

The nervous system is the petrol tank of the human engine, the driving power of the whole human machinery.

Every other system is dependent upon and regulated by nerve force. Airmen, therefore, will appreciate what I mean when I say that the storage of nerve force is the most vital necessity of the human body in every condition and circumstance of life, but especially in the peculiar and abnormal condition by which they are almost daily subjected.

Airmen anxious to get and keep "in the pink" should try "a course of Sandow." I shall always be pleased to place my services at their disposal, and they can carry out my advice either by correspondence, either here or on active service at the front. Only a few minutes daily will suffice to recruit their nervous force and condition, and the exercises are always most carefully chosen to suit the individual in every way. They are easy and pleasant to carry out, and increase nerve force in *the only and natural safe and radical way*. Personal consultations by appointment or free descriptive booklet will be sent on request. Address all letters personally.

COUPON.

Mr. E. Sandow, Sandow's Curative Institute, Ltd.,
32, St. James Street, LONDON, S.W.1.

Sir,—Please send free booklet descriptive of your methods as offered.

Name .....
Address .....
.....
Age ..... "Aeroplane," 11/9/18

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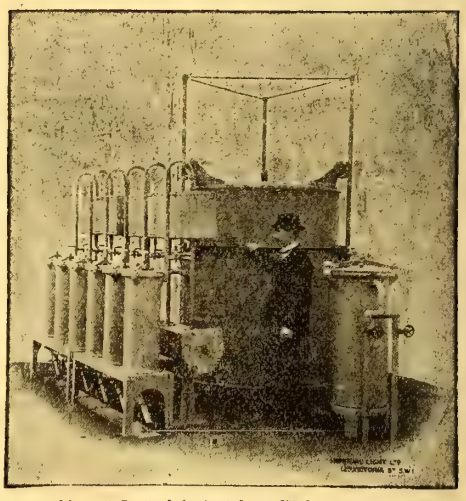


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COMMERCIAL AERONAUTICS

AERIAL VEHICLES.

By "Medway."—(Continued).

[Continuing the discussion of the various types of commercial aeroplanes for peace use, "Medway" foretells the two following types.—Ed.]

3.—The Lorry.

The sphere of application of what might be described as the aerial lorry will for some time to come be less general than that of the light delivery-van.

In the great majority of cases, the lorry on land or on air is required to carry goods at the lowest possible cost; high speed being a minor consideration. Consequently, in countries where rail, road or water communication exist, the aerial lorry will have little to recommend it, on account of its high operating cost, coupled with its limited carrying capacity.

Even in undeveloped countries, it cannot be regarded as a straightforward commercial proposition. Goods must be very valuable before they will stand the addition of the cost of aerial transport. There are, however, a limited number of cases in which the aerial lorry could be employed with advantage.

Take, for instance, the case of a district capable of great development, but where the initial stages are entirely checked by a total absence of transport facilities. In the very early stages, the aerial lorry might be used for a service between such a district and the coast. But directly the total load to be dealt with became anything approaching a considerable figure, a road or railway would be constructed, and the aerial services discontinued.

The service would, in fact, never be worked on a paying basis, but only because it represented a smaller loss than that involved in the payment of interest on the cost of a railway and its plant.

If, for instance, a railway would cost a million pounds, the interest on the capital involved would be £50,000, and, so long as the tonnage to be dealt with remained negligible, an aerial service would probably be the cheaper proposition. Such a service would have to be financed by the Exchequer just as the railway would have to be, until the traffic rendered it self-supporting.

Another case is that in which a commodity is only obtainable from a few districts and in small quantities. Some of these districts happen to be inaccessible, and therefore the price of the commodity remains very high. It is conceivable that it could be brought from the inaccessible districts by aeroplane, and thus enable it to be marketed at a price making it commercially possible to develop those districts.

Altogether, comparatively heavy goods transport is not the field of the aeroplane, and the most that can be expected in this direction is the establishment of occasional and temporary services by aeroplanes, which would probably be designed to travel at the lowest speed compatible with safety.

4.—The Aerial 'Bus.

The aerial 'bus will form the basis of a class of aerial services which, with the mail van, perhaps appeals most easily to the general public.

One can readily imagine an aerial 'bus service running, say, between London and Paris, or between London and Glasgow. Such a service would be used by people who wished to save time, because time is worth money. It would bear much the same relation to the railway and the steamship that the motor omnibus bears to Shanks' Mare.

In less developed countries it will occupy a somewhat different position. There it will not have to compete with the railway, or other forms of traffic. The service will simply be inaugurated to act as the only means of transport, with the exception of the horse, ox, or camel.

Where distances are at all great, it will be found cheaper to travel by aerial 'bus service than by the old methods. The aeroplanes not having to compete with any fast rail transport will not require to be designed for high speeds.

Thus, there will be two distinct classes of aerial 'bus—the express 'bus and the comparatively slow stage vehicle. Where distances permit, the express service will run non-stop from terminus to terminus, because the whole idea behind it is entirely, or almost entirely, its better speed in comparison with other methods of transport.

It will have to start from some point as conveniently situated as possible, and this will be one of the main difficulties, because it will run between large towns where landing grounds cannot always be conveniently placed in central positions.

The stage services will run in countries where only quite slow methods of transport exist, and where the bulk of traffic does not justify the construction of railways or roads upon an adequate scale. The stage service will stop at intermediate points to pick up and set down passengers, and will not necessarily take the most direct route, but will rather follow that which enables it to link up the largest number of local centres.

The financial success of the express service must depend entirely upon people being willing to pay for extra speed. That of the stage service will depend upon the fact that where the volume of traffic is small it is cheaper to pay high operating costs than to pay interest on a large capital sum invested in a permanent way. Altogether, the aerial 'bus will represent one of the biggest developments of commercial aeronautics in the near future.

AN OPPORTUNITY FOR RECIPROCATION.

So many people concerned with aviation in this country are not merely interested in French aviation, but owe so great a debt to France that many may like to assist in increasing the interest in the Bibliothèque et Musée de la Guerre. This is a national institution created by a vote in the French Parliament, and is intended to collect, classify and catalogue the principal "documentation" both of France and foreign countries concerning the war.

The institution comprises both a library and a museum. All sorts of publications and documents concerning the Services and public establishments and associations of all sorts, industrial, commercial, agricultural and so forth are included. The museum is intended to include everything outside actual publications, such as pictures, stamps, posters, drawings, photographs, sculpture, medals, war postcards, things manufactured by the soldiers, wounded, prisoners and others, in fact anything not of a particularly large size concerning war work.

The foundation of the museum is the private collection of Monsieur and Madame Henri Leblanc who had the happy idea of starting such a collection in 1914, and have now already accumulated quite a varied assortment of interested objects.

Anybody who would like to contribute any relics of particular interest to the French nation is invited to communicate with the Directeur of the Bibliothèque et Musée de la Guerre, 39, rue du Colisée, Paris, and if their particular contribution is desired, it can be sent through the French Embassy in London. The library and museum is itself under the control of the Minister of Public Instruction and of Arts, and is therefore of a thoroughly responsible official character.

TRYING IT ON THE DOG.

The "Times" correspondent wrote on Aug. 8th:—

For the purpose of qualifying American and Allied aviators in this country for the contemplated Transatlantic flight, and to demonstrate incidentally to the central States the immense strides made in aeronautics, the United States Military Aeronautical Division has arranged for a great cross-country flight over a distance of 3,000 miles.

The flight was to start from Dayton, Ohio, on Aug. 15th. Eleven American aviators were to participate in it, and they were to be accompanied by English aviators. The Americans were to use Curtiss machines of the "H" type.

The aviators were to halt at Cincinnati, Columbus, Toledo, Detroit, Indianapolis, St. Louis, Kansas City, Omaha, Desmoines, St. Paul, Milwaukee, and Chicago, and at each place will give exhibitions of flying.

[The experiments would be more useful if they were carried out by the type of machine intended for the Atlantic crossing. So far one has heard nothing of results.—Ed.]

GREEK AERIAL POSTS.

The "Times" Athens correspondent reported on Aug. 8th that an aerial mail service was to be established between Athens and Salonika. A good number of machines had been reserved by Gen. d'Esperey for that purpose. A similar service between Athens and Janina, which has already been inaugurated, will be regularised. It is hoped that air services will soon be extended to other Greek towns.

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AIRCRAFT FINANCE

CURRENT TOPICS.

Medicine and Flights.

Therapeutics and aeronautics must strike the average man as being a strange mixture, though, perhaps, the cynic might suggest that the perpetrators of frolicsome, aerostatic stunts often need pills. However, it is a serious proposition we are referring to, and is officially recorded in the company world, where there has just been registered a venture entitled Pomeroy's, Limited. It has a capital of £10,000, divided into 9,000 £1 ordinary shares and 20,000 deferred shares of 1s. each.

Objects of the New Venture.

Officially the objects of the new company are: "To acquire the business, undertaking, property, and assets of Aero Undertakings, Limited, and all the letters patent, provisional specifications, inventions, whether protected or not, and recipes of medical cures of one John Pomeroy." John Pomeroy is to be the governing director, and C. Heath, G. F. Woodger, and Amelia Pomeroy figure in the directorate. The "Financial News" suggested that the last-named will run the medical cure department, and thus Ameliarate suffering! And there is a war on, too.

Rudge Whitworths and Swifts.

There has been quite an active business in aircraft and kindred shares with values in most cases well maintained. There was a temporary setback in Rudge Whitworths in consequence of the uncertainty surrounding the dividend. Ten per cent. has been paid in respect of the past year, but it is not known whether this will be supplemented by a further distribution. Swifts have been bought in expectation of good results, which, by the way, must be realised to justify the present market price of the shares.

Singers' Results Analysed.

Some disappointment was caused by the dividend of Singer and Co. It is 20 per cent., subject of income tax, compared with 25 per cent. free of tax. But it must be borne in mind that the capital was doubled a year ago by the capitalisation of the reserve fund, which operation resulted in shareholders receiving a bonus of one new fully paid share in respect of each share held.

Dividend Could be Repeated.

It is clear, however, that the higher payment of 25 per cent. could have been repeated quite comfortably had the directors thought fit. Instead a sum of £25,000 is added to the reserve fund, whereas the 20 per cent dividend proposed, including the proportion on the increased capital, only calls for a little over £14,500, while a balance of £17,612 is carried forward.

Size of Reserve Funds.

The profit statement as presented in the report is not very easy to compare. Thus the net profit of £35,529 is given after allowing for depreciation, income tax, excess profit and other charges. With the amount brought in, the disposable balance is £57,281, and it is important to note that with the present addition of £25,000 the reserves are brought up to a total of £75,000, which is equal to almost 75 per cent. of the enhanced capital.

Record and War Prosperity.

In pre-war days the Singer Co. had not a brilliant financial career. Its capital originally stood at £800,000, whereas it is now only £101,000, after the doubling process of twelve months ago. Since the outbreak of hostilities there has been a striking change. There was no dividend payment on the ordinary shares for several years prior to July, 1914. In respect of the financial year 1913-4, a payment of 10 per cent. was made on the ordinary shares, followed by 15 per cent. for 1914-5, 20 per cent. for 1915-6, 25 per cent. for 1916-7, supplemented by the share bonus of 100 per cent., and now it is 20 per cent. less tax, which makes a considerable difference to the tax-free payment of a year ago.

Rubber is Cheap.

From the consumer's point of view the present position of rubber provides little cause for complaint. The article is selling cheap, and there is enough of it. But it is different with the holder of shares of a rudder-producing company. The market therein has been in a state of abysmal depression, and derives little or no comfort from the immediate prospects, though it enjoys half-hearted rallies at times.

Plight of the Industry.

It is not only a matter of reduced selling price; there is no compensation of correspondingly smaller production costs. Indeed, the tendency is for costs to stiffen, and to crown matters the output must be artificially restrained. The indications are that rubber shares will get worse before they mend; the industry is in for a critical period and those companies who are not financially strong enough to weather the storm will suffer badly.

There Will be a Change.

It is a sad plight for a young industry which has done so much good. But things will alter in time and some shares, possessing intrinsic merit, ought to be good to lock up for future possibilities. No one will deny that rubber consumption will tend to increase in the future rather than contract. One has only to look round and see the changes wrought by the war in several directions to be convinced of that.

NEW COMPANIES.

Coventry Foremen's Association of Engineering and Allied Trades, Ltd.—Registered Aug. 26th. Capital £4,000 in £1 shares. To promote the mutual acquaintanceship of and exchange of opinions by foremen, managers and departmental heads of the engineering and allied trades of Coventry, to organise lectures, demonstrations and visits to works and other places, to encourage inventions, to acquaint members with legislation and regulations affecting the management of workshops, to assist members in obtaining employment, to take action in combating foreign competition in connection with the said trades, etc. The subscribers, who are also the first directors, are:—J. H. A. Bagley, 60, Melbourne Road, Coventry, foreman Coundon, N.S.A.A. Factory (50 shares); S. Greenall, 118, Earlsdon Avenue, Coventry, foreman H. Willamsons, Ltd. (25 shares); F. G. Meadows, 20, Stanley Road, Earlsdon, Coventry, foreman, Maudsley Motor Co., Ltd. (20 shares); E. L. Roberts, Lismore, Stoke Park, engineer (50 shares); G. W. Donald, 23, Shaftesbury Road, Earlsdon, Coventry, engineer (10 shares); G. W. Eastwood, 75, Hugh Road, engineer (50 shares); L. W. Williamson, 60, Thornhill Road, Coventry, engineer (20 shares). Registered office: 7, The Quadrant, Coventry.

Offer Engineering Works, Ltd.—Private company. Registered Aug. 31st. Capital £25,000 in £1 shares. (15,000 "A" and 10,000 "B".) To take over the business of aviation engineers, carried on by Messrs. Offer and Sons at Union Street, Kingston-on-Thames. Agreement between J. R. M. Offer and H. J. Offer. The subscribers (each with one "B" share) are:—J. M. Dwelly, 22, Beresford Road, Kingston-on-Thames, works manager; Mrs. V. I. Offer, 12, Fairfield South, Kingston-on-Thames. The first directors are:—J. M. Dwelly, and Mrs. V. I. Offer and H. J. Offer (managing director). Registered office: 22, Union Street, Kingston-on-Thames.

Pomeroy's, Ltd.—Private company. Registered Sept. 3rd. Capital, £10,000 in 9,000 ordinary shares of £1 each and 20,000 deferred shares of 1s. each. To acquire the business and assets of Aero Undertakings, Ltd., and all the letters, patent, provisional specifications, inventions (whether protected or not), and recipes of medical cures of John Pomeroy. The subscribers (each with one ordinary share) are:—John Pomeroy, 31, Hartwood Road, Stamford Brook, W.; Mrs. A. Pomeroy, 31, Hartwood Road, Stamford Brook, W. The first directors are:—J. Pomeroy (governing director), C. Heath, G. F. Woodger, and Amelia Pomeroy. Registered office:—4, Pomeroy Row, Edmonton, N.

The First Advance Prospectus Filed Since March, 1916.

Snell's Supercork Syndicate, Ltd., a concern "intended to be" incorporated under the Companies Acts, has filed a prospectus at Somerset House, this being the first prospectus filed by a proposed new company in advance of incorporation since March, 1916. Of course, if the necessary subscriptions be not forthcoming, the company may never be incorporated. The capital is to be £24,000 in 8,000 8 per cent. cumulative preference and 16,000 ordinary shares of £1 each; 13,000 ordinary shares are to be allotted to the vendors. The proposed directors are: J. M. C. Cox, E. S. Fergusson, A. R. Molison, T. Packer and H. J. Snell. Secretary and office (pro tem.): W. J. H. Lowe, F.I.S.A., Ormond House, Trinity Lane, E.C.4. The company is to take over a process for manufacturing a cork substance from cork cuttings or waste material. Some of the uses suggested are for ribs of aeroplanes, artificial limbs, buffers, buoys, boat fenders, electric insulators, yacht decks, deck seats, book covers, linings for refrigerators and ice stores, fishing floats, soldiers' helmets, backs for hair and other brushes, heels for women's and children's boots, insoles, jewel cases, bungs for barrels, children's toys, casings for boilers, hot air and steam tubes and electric wiring, etc. "It is believed" that the substance could also be used for hulls of ships and sea planes.

A MODEL AIRCRAFT FACTORY.

One of the most perfectly arranged and most efficiently run factories which it has been one's pleasure to inspect is that known as the Somerton Works of J. S. White and Co., Ltd. Somerton is not a town; it is not even a village on the map; so the name will convey no information to German raiders in the unlikely event of their penetrating so far west as the general area in which J. S. White and Co. play so important a part in the production of assorted munitions of war.

These works are a war-time growth. They were laid out and designed by Mr. Compton Paterson, a pioneer of aviation alike in the Liverpool district and in South Africa, and in the early days one of the most brilliant aeroplane pilots and designers in this country. At the time when the works were built there was a shortage of structural steel, and consequently they were constructed entirely of brick and timber. This is one of the lightest and airiest shops in the country, despite these limitations.

A feature of the lay-out is that from the works manager's office he can survey every department in the works, and each foreman can from his own office see every man at his bench. The result is, naturally, a high rate of output.

Mr. Paterson is in the happy position of being manager of the works which he has has himself planned. He is also fortunate in having been able to get together a most efficient staff of foremen and assistants, who are thoroughly loyal to the Services which they supply, and to the firm for whom they work. The bench hands, also, work well together, and take a keen interest in their jobs, which, considering the pleasing circumstances under which they work, is not surprising.

One would like to describe the lay-out of the works in detail, but, even if there were no such thing as a Censor, one would hesitate to do so, for one doubts whether that German efficiency of which one hears so much has ever produced any works plan so well calculated to give the maximum of output with the minimum of labour. Both as regards the number of employees and the labour imposed on the individual the whole system in force is calculated to minimise work. Attached to the works is an excellent canteen, built by the firm, and perfectly managed by Mrs. Denny, which provides at absurdly low prices meals of a kind unknown to those who are compelled to feed in London's badly organised restaurants. When one sees such workshops, and such provision for the comfort of the workers, as prevail at the Somerton shops, one envies the employees, and recalls the various discomforts of one's own workshop days some 25 years ago. Certainly the British employer of to-day does treat his employees handsomely, and none does better in this way than do J. S. White and Co.—C. G. G.

A CHANGE IN NAME.

It has been decided that, from now onwards, the word "aviation" should be omitted from the title of the enterprises which Mr. Claude Grahame-White controls, and that the Company which bears his name should be known in future simply as "The Grahame-White Company, Ltd."

This step has been taken for two reasons. In the first place, the name of the Company is so well identified with aeronautics that any specific reference in its title to the work on which it is engaged has now become superfluous; and, in the second place, the word "aviation," which suggests the art of flying itself rather than the whole of the science and industry of aeronautics, has therefore become too narrow in its implication.

A COMPANY'S AFFAIRS.

At the Guildhall on Sept. 9th, before Alderman Sir Alfred Bower, Robert Taylor, an engineer, of Old Broad Street, appeared to a summons charging him with having committed perjury in affidavits sworn in matters connected with Associated Aircrafts (Limited), Bond Street, of which he was the promoter.

Sir Archibald Bodkin, in opening the case, said that the prosecutor was Mr. Panajotic Demetrino Baronnos, a Greek. The Associated Aircrafts (Limited) was registered in October last year, with a capital of £25,000, divided into 10,000 Preference shares and 15,000 Ordinary shares. The defendant was the managing director. On Feb. 26th it was resolved that the capital should be increased to £1,000,000. In May the company held another meeting, when a resolution was passed to the effect that, as Treasury sanction had not been obtained for the increase, the former resolution be rescinded. Treasury sanction had not been specifically refused. On May 26th Mr. Cecil Nathan, the secretary of the company, induced Mr. Baronnos to advance £5,000 for payment of the dues to the Treasury in respect of the increased capital scheme, which, according to the resolution, had been abandoned. The cheque was made payable to Taylor, who had not used it in connection with that scheme. For the accommodation the prosecutor received three bills, amounting to £5,500, and shares in the Weldon Engineering Company. The bills were not met on maturity, and when the prosecutor sought to obtain judgment for the money, the defendant put in an affidavit, in which he said that the plaintiff, in breach of the agreement, presented the bills, notwithstanding that negotiations were pending in respect of the company's increase of capital. There were, it was alleged, other affidavits in which sworn statements were untrue.

Sir Richard Muir, for the defence, intimated that he should contend that what were said to be perjuries were, in fact, truths, and that the whole thing was due to a mistake.

The proceedings were adjourned.

SPORTS AT KINGSBURY.

The Kingsbury Aviation Sports Club (under the presidency of Capt. E. Barningham), held their first annual meeting, at the company's aerodrome, on Saturday last. The Great Central and Metropolitan Silver Prize Band rendered a pleasing selection of music during the afternoon and evening.

There was a great number of entries for the majority of events; the series of Tug-of-War competitions being the cause of much enthusiasm from the respective teams' supporters.

The popular belief that a woman cannot throw was amply proved to be incorrect in the novel event of Throwing the Cricket Ball, for women only. Only one competitor supported the old theory that a woman throws behind her.

At the close of the sports, Mrs. A. A. Barningham presented the prizes to the winners. Mr. Troy made a little speech, on behalf of the workers and competitors, thanking Capt. Barningham and his mother for the fine way in which they and the staff had co-operated, to make the meeting so successful. Mr. Carter, the Hon. Secretary, was specially praised by the speaker, for superintending many of the arrangements.

Captain Barningham replied that it was his and the staff's privilege and duty to do all that they could to give the workers at Kingsbury a good time: and added that it was also a pleasure for his mother to be present with them at their sports.

The meeting was brought to a pleasant and successful finish with a short concert and dancing on the lawn.

SPORTS AT COWES.

On Saturday last the employees of J. Samuel White and Co., Ltd., of Cowes, held their annual sports at the athletic ground so considerately laid out by the directors of the firm for the benefit of the workpeople. It was a splendidly run show, the entries were good, the competition keen, and the events went off like clock work. The attendance was huge, and a very handsome sum of money should be available to hand over to the Isle of Wight Territorial Active Service Fund, through which nearly £100 per month is now being remitted to Island Territorials who are prisoners of war, apart from other expenses for comforts for men on active service.

A great performance was put up in the ten miles "Marathon" race by Serjt. Marshall, who covered the 10.1 miles in 63 minutes, with Corpl. Watson a good second. A feature of the meeting was the fine running of Stanley Nelson, who won or was placed in about six different events, including both those for boys under 18 and for men of any age. His style is excellent, and he bids fair to be as prominent a runner as his father, Mr. A. Nelson, who some years ago put up the 1,000 yards British grass record of 2 m. 15 secs.

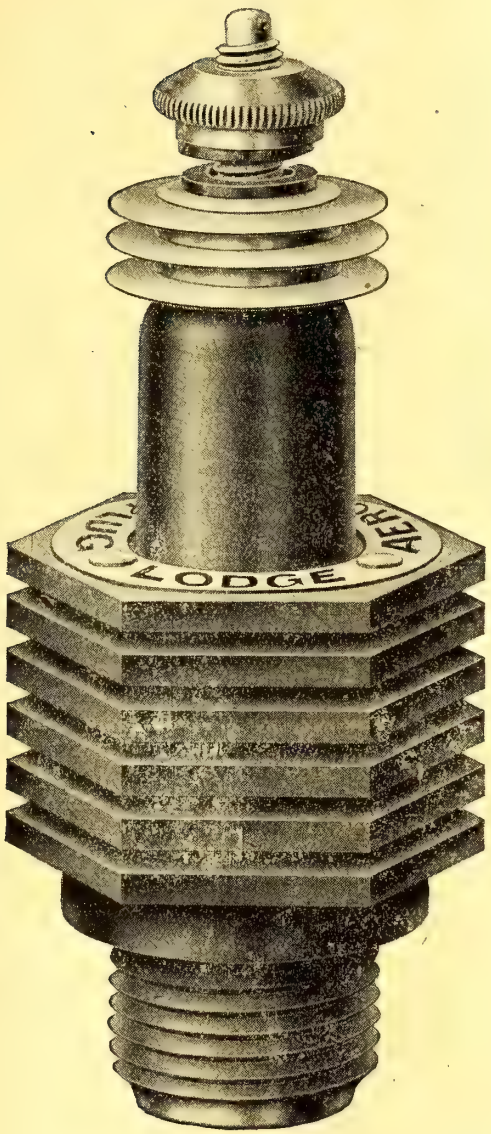
Mr. Nelson and Mr. C. Compton Paterson were jointly responsible for the organisation of the sports, and deserve every congratulation on their success, which should entail considerably more work on them next year, for such success is bound to produce still bigger entries in future.

Mrs. C. C. Carnt, widow of the late managing director of the firm, presented the prizes, and Mr. S. J. Smith, the present managing director, with his co-directors, Sir F. Marshall and Capt. Ham, were present throughout the meeting, showing the keenest interest in their employees.

The catering was done in wonderful style by Mrs. Denny, chief of the canteen department, who provided refreshments which would have done credit to a West End restaurant in pre-war days. Altogether one envies the employees of J. S. White and Sons, who should be well content with their lot, living and working as they do at a health resort, and receiving all sorts of kindly consideration from their employers.

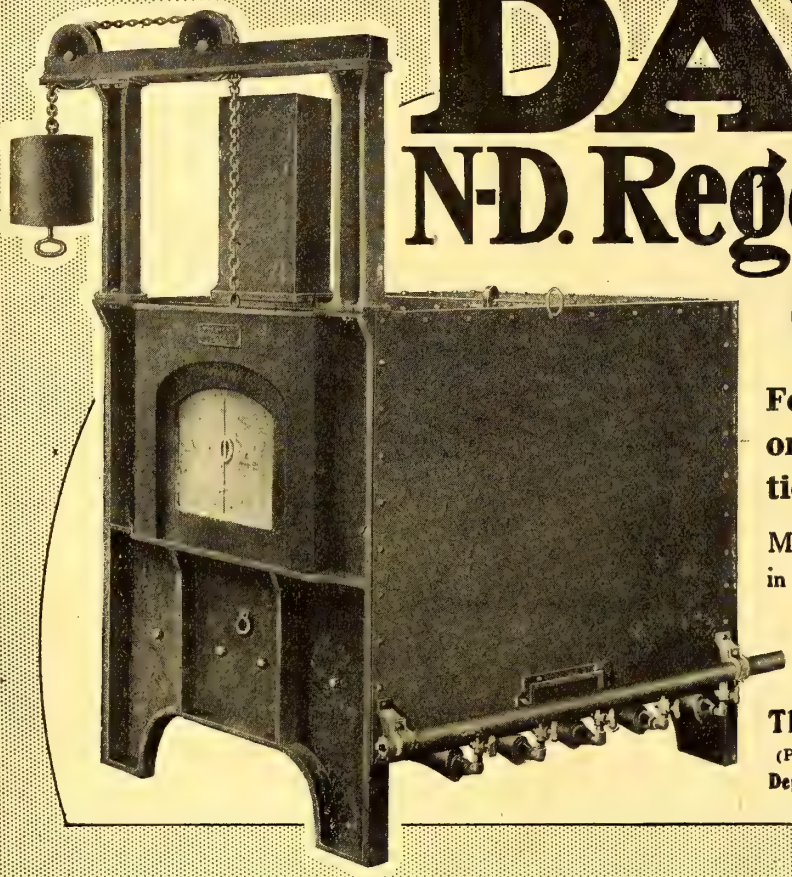
One was glad to see at the meeting one of the pioneers of naval aviation, Engineer-Commander Gerald Aldwell, R.N. (late Lt.-Col. R.A.F. and Wing Commander R.N.), now General Manager of J. S. White and Co., Ltd. His many friends in the Service will be glad to hear that residence in the Island has restored to him all his pre-war activity of mind and body—in fact, one has never seen him looking as well. Mr. Compton Paterson, who was the pioneer of military aviation in South Africa, the first of Liverpool's aviators, and is now manager of the Somerton Works, laboured indefatigably throughout the day—and for days and nights previously—to make things go well, and had his reward in complete success. Another of the old-timers present was Mr. Marcus D. Manton, the firm's test pilot, who has done most valuable work, not only for J. S. White's, but for other firms in the district. Altogether one's visit was thoroughly enjoyable.—

C. G. G.



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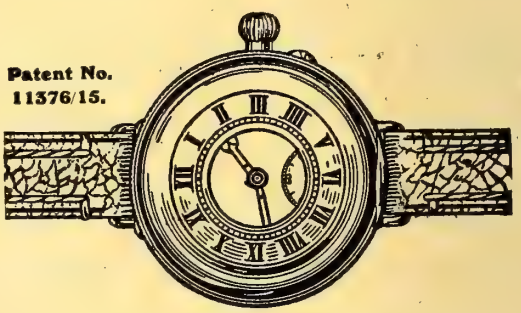
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(*Continued from page 915.*)

Lts. (A.) to be Lts. :—S. F. Culver, July 11th; E. O. L. Bell, July 27th; L. J. N. Mackay, Aug. 16th.

Lt. E. L. Pape to be Lt. from (K.B.), May 31st.

Lt. J. D Loraine to be Lt. from (O.), June 19th.

Lt. (Hon. Capt.) E. J. Cuckney, D.S.O., to be Lt. (Hon. Capt.) from (S.), Aug. 10th.

The following are granted temp. commns. as Sec. Lts. :—W. W. Edward, and to be temp. Capt. whilst specially empld., Aug. 8th; W. H. Cant, Aug. 27th; W. J. Root, and to be temp. Lt. whilst specially empld., Aug. 30th; J. J. Brown, Sept. 1st; H. E. Sugden, F. P. Carroll, Sept. 2nd.

Capt. I. McA. M. Pender (Capt., Sea. Highrs.) relinquishes his commn. on ceasing to be empld., Aug. 14th.

Capt. I. J. M. Anderson relinquishes his commn. on account of ill-health, and is granted the hon. rank of Capt., Sept. 4th

The following Sec. Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Sec. Lt. :—P. J. Cardell, J. W Frechette, W. N. H. Warden, Sept. 4th.

The following Sec. Lts. resign their commns. :—B. L. Banks, F. Boyer, L. P. J. Dion, C. R. Fisher, J. W. Jameson, O. S. Lieberg, H. C. Pearson, Sept. 4th.

TECHNICAL BRANCH.—Capt. (temp. Maj.) R. de Sarigny to be temp. Lt.-Col. whilst empld. as Lt.-Col., July 12th.

Lt. (temp. Capt.) W. W. Hall to be temp. Maj. whilst empld. as Maj., Aug. 28th.

Sec. Lts. to be temp. Lts. whilst empld. as Lts. :—J. G. McK. M. Stronach, June 6th; R. W. Edwards, Aug. 18th.

Lt. K. I. Goodman to be Lt. from (Ad.), May 31st.

Lt. T. W. Franks to be Lt. from (A.), Sept. 1st.

Sec. Lt. A. Ford relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., Sept. 4th.

The following resign their commns. :—Sec. Lt. E. Bagshaw, Sec. Lt. J. C. Keen-Hargreaves, Sec. Lt. H. L. Whitelaw, Lt. R. H. Whittington, Sept. 4th.

The initials of the following temp. Lts. are as now described, and not as in "Gazette," Aug. 16th :—J. F. Lamonby, B. P. K. Walsh.

The notification in "Gazette," Aug. 13th, regarding Sec. Lt. (temp. Capt.) A. E. Fincher is cancelled.

MEDICAL BRANCH.—The following are granted temp. commns. as Capts. :—R. Hall, Aug. 28th; M. C. Breese, I. de B. Daly, Sept. 1st.

MEMORANDA.—The following are granted hon. rank of Maj. while empld. as Asst. Ch. Insprs., A.I.D. :—Capt. B. Myers; G. S. M. Taylor (Capt., R.E., T.F.), and is granted a temp. commn. as Capt.; Capt. A. A. Ross, G. W. C Kaye (Capt., R.E., T.F.), and is granted temp. commn. as Capt.; Capt. H. P. Philpot, Sept. 4th.

The following are granted hon. rank o Capt. while empld. as Insprs., A.I.D. :—J. A. O'Brien (Lt., Lond. R., T.F.), and is granted temp. commn. as Lt., Lt. F. Gay, Lt. L. V. Rothschild, Lt. W. S. Kellar, Lt. J. E. Appleyard, Lt. W. F. Collins, Lt. E. Fairbrother, Lt. W. Parr, Lt. H. T. Wright, Lt. G. R. Groves, Sept. 4th.

The following are granted temp. hon. commns. as Lt. whilst empld. as Asst. Insprs., A.I.D. :—J. H. Woodruff, T. Kimpton, D. H. Irwin, M. Toombs, W. P. Savage, O. R. Wickham, H. C. Myers, R. Richardson, E. C. Head, A. McIsaac, H. E. Portsmouth, W. Williamson, A. M. Menell, G. H. Tattershall, H. E. White, R. S. L. Bailey, R. Searle, E. D. Burley, C. Newbald, J. Hay, A. E. M. Hunn, P. H. Harrower, C. J. Walters, T. H. Thresh, A. E. Kitsell, F. R. Ohler, E. Gough, H. D. Dall, J. E. Haswell, H. H. Gruning, J. P. Tweedy, L. G. Parker, W. L. Macfie, A. H. Simmonds, P. C. Dick, W. G. Edwards, L. W Atcherley, W. J. Duncan, W. R. V. Morgan, J. B. Mitchell, T. G. Rawson, H. J. Wilkins, C. J. Whall, J. B. Greer, A. Burn, R. E. Tiffin, W. W. Purves, L. S. Rudman, A. E. Marsden, H. S. Wonham, J. Kelly, J. Dixon, A. W. Holden, C. H. Howell, B. Coulam, H. Hey, S. Birley, W. R. H. Arnold, P. H. Ball, H. E. G. Rowley, J. H. Davis, J. J. A. Gilmore, S. J. Norton, G. A. Hopper, H. Tanner, F. S. Holder, A. J. Bohringen, W. C. S. Phillips, F. J. Crinage, C. Watt, H. Taylor, F. E. Coles, E. H. Wilson, F. Butt, F. G. Wedge, W. J. Southwell, C. A. Packer, T. T. Sawday, W. M. Harrison, G. J. Ayling, F. Greenall, T. Spencer, A. R. Woods, M. Paterson, E. Johnson, J. H. Bains, F. R. Newton, A. J Marshmenu, J. L. Manson, W. Ramsay, Sept. 4th.

L. T. M. Pennington is granted a temp. commn. as Hon. Capt., Sept. 4th.

G. Fineran (late Lt., R.A.F.) is granted the hon. rank of Lt., Aug. 7th

The notification in the "Gazette," of Aug. 27th, concerning Capt. H. A. Porter is cancelled.

Capt. (temp. Maj.) J. H. C Minchin relinquishes his appt. as S.O. 2nd Cl. and temp. rank, July 14th.

WAR OFFICE, Sept. 4th.

REGULAR FORCES.—ESTABLISHMENTS.—R.F.C.—MIL. WING.—Asst. Instr. in Gunnery.—Graded as an Equipt. Officer, 2nd Cl.)—Lt. M. Tod, R. Highrs., from a Flying Officer, and to remain secd., March 8th, 1918.

ROYAL REGT. OF ARTILLERY.—R.H. AND R.F.A.—Lt. W. E. Emerson, Spec. Res., relinquishes the actg. rank of Capt. on ceasing to comd. an Anti-Aircraft Area, April 15th, 1918.

OVERSEA FORCES.—CANADA.—WESTERN ONTARIO REGT.—Temp. Capt. N. S. Caudwell ceases to be secd. for duty with the R.A.F., July 18th, 1918.

WAR OFFICE, Sept. 5th.

The name of the undermentioned has been brought to the notice of the Secretary of State for War for valuable services rendered in connection with the War :—

Godfrey, Miss C. M., Central R.A.F. Hosp., Hampstead, London.

WAR OFFICE, Sept. 6th.

REGULAR FORCES.—OVERSEA FORCES.—CANADA.—Can. Cav.—Temp. Capt. (actg. Maj.) W. A. Bishop, V.C., D.S.O., M.C., D.F.C., ceases to be secd. for duty with the R.A.F., Aug. 5th, 1918.

Temp. Capt (actg. Maj.) W. A. Bishop, V.C., D.S.O., M.C., D.F.C., to be temp Lt.-Col., Aug. 5th, 1918.

AIR MINISTRY, Sept. 6th.

The following temp. appt. is made at the Air Ministry :—Staff Officer, 3rd Class.—Sec. Lt. (temp. Lt.) A. H. Dawson, and to be temp. Capt. whilst so empld., Aug. 19th.

The following temp. appts. are made :—Staff Officer, 2nd Class.—Lt. (temp. Capt.) H. J. Lister, and to be temp. Maj. whilst so empld., June 23rd.

Staff Officer, 3rd Cl.—(T.)—Sec. Lt. C. A. Perry, and to be temp. Capt. whilst so empld., July 28th.

Staff Officer, 4th Cl. (1st Grade).—Sec. Lt. A. K. Spens, and to be temp. Capt. whilst so empld., Sept. 1st.

FLYING BRANCH.—Lts. (temp. Capts.) to be temp. Majs. whilst empld. as Majs. (A) :—J. O. Galpin, D.S.C., R Leckie, D.S.C., Aug. 8th; M A. Simpson, Aug. 23rd.

Lts. (Hon. Capts.) to be temp. Capts. whilst empld. as Capts. (A.) :—A. B. Ellwood, H. L. Everitt, F. J. W. Mellersh, J L. A. Sinclair, Aug. 28th

Lts. to be temp. Capts. whilst empld. as Capts. (A.) :—N. D. Armstrong. J. F. Byrom, E. D. Clarke. M.C., W. Henderson. H. H. James, W. E. James, M.C., J. F. Larson, B. Monkhouse, S. Wyborn, Aug. 1st; C. F. Falkenburg, Aug. 9th; C. R. R. Hickey, Aug. 13th; C. A. Rea, Aug. 17th; D. Darby, Aug. 22nd; D. M. Darroch, G. A. Wells, M.C., Aug. 23rd; R. M. Berthe, S. F. H. Thompson, M.C., Aug. 24th; G. H. Dykes, Aug. 25th; H. D. Barton, W. E. G. Mann, Aug. 27th; D. I. Evans, M.C., Aug 30th; F. Woodcock, M.C., Sept. 1st; C. M. G. Farrell, Sept. 2nd.

Lt. (Hon. Capt) J. N. Wilson to be temp. Capt. whilst empld. as Capt. (Dir.), May 20th.

Sec. Lt. A. J. Moore to be temp. Capt. whilst empld. as Capt. (K.B.), Aug. 23rd.

Lt. (temp. Capt) E. W. Ffrench to be Lt. (A.), and relinquishes his temp. rank, Aug. 3rd.

Lts. (Obsr. Officers) to be Lts. (A. and S.) :—B. Morgan, July 28th; E. L. Barrington, July 30th; H. Thomas, G. Gibbs (Hon. Capt.) H. A. Kelsall, and to be Hon. Capt., July 31st; G V. Carter, Aug. 8th; E. R. B. Playford, Aug. 10th; (Hon Capt.) G. B. Davies, and to be Hon. Capt., Aug. 12th.

Lt. J. Tocher to be Lt. (K.B.), from (Obsr. Officer), July 10th. (Substituted for notification in "Gazette," Aug. 6th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A. and S.) :—F. H. Fisher, May 17th; R. C. Patullo, May 22nd; J. L. Killoran, May 27th; J. V. Coupe, June 1st; F. N. A. Vincent, July 2nd; E. G Renton, July 3rd; D. A. Martin, J. V. Flanagan, L. H. McHaig, July 6th; W. Hodder, J. M. MacDonald, G. K. Mills, July 9th; S. G Jary, A. D. MacKenzie, V. O. Knowles, July 11th; W. H. Irvine, July 13th; W. E. Baxter, W. J. Downie, July 14th; W. A. Grant, B. H. Wilson, July 15th; G. C. Lugg, July 17th; W. F. Allen, July 18th; E. Fulford, C. Dean, W. J. Penningroth, E. C. Latto, E. F. D. Gregory, W. Gilbert, G. F. Lane, July 19th; W. K. Gatewood, J. C. Boyle, H. H. Lewis, W. E. Johns, July 20th; J P. F. English, W. R. Penny, R. W Kerr, W. Spriggs, J. H. Huxley, A. K. Charlesworth, July 21st; J. H. Cuthbertson, W. F. Maker, J. P. Sharp, July 22nd; C. C. M. Hilditch, J. Haigh, J. E Mairty, July 23rd; B. S. Philp, W. G. Pearce, S M. Desmond, July 24th; W. H. Cole, July 25th; W. F. Maker, O. H. Brown, R. I. A. Hickes, July 26th; G. E. Steele, F. C. Annett, H. S. Thomas, A. C. Davern, K. B. Gibb, J. M. McChlery, July 27th; J. R. Roulston, July 27th; P. J. Carr, V. H. Barnfield, J. Scott, R. A Broadbank, A. D. M. Edwards, July 28th; J. L. Wight, O. H. White, F F. Winter, G. C. Edmond, T. W Griffiths, J. H. Macpherson, A. M. Cross, G. King, J. W. Bishop, July 29th; B. J. Dearlove, S. F. Dudley-Smith, G. W Irving, A. Adam, T. E. Kemp, I. L. Wood, V. P. Donald, S. H. Hughes, C. McLean, J. C. Malcolmson, T. R. Hatton, J. D Russell, L. Springett, D. C Rees, C. R. G. Abrahams, R. R. Thompson, S. H. Porter, July 30th; C. E. Francis, S. G. Gordon, N S. Boulton, M. Marks, R. J. Clench, W. H. C. Gillett, A. J. Goring, P. King, E. Sidey, H. Leadley, C. W. Trimmell, H. R. Cooke, G. R. Moffoot, F. Coleman, L. T. Wilson, S. P. Trites, H. G. Jackson, V. A. Mather, J. G. Newton, L. Dawson, E. P. Clacey, C. L. Lowe, C. Macintyre, R Ramsey, A. H. Farrington, July 31st; C. T. G. R. Miller, G. W. Ashbrook, Aug. 1st; T. A. Grieg, G. A. Chellingworth, R. A. Coulthurst, Aug. 2nd; C H. Church, Aug. 4th; R. Bramwell, N. A. Talbot, E. L. French, Aug. 5th; F W. Hatton, C F. Yokom, W. J. Potts, Aug. 6th; T. Richardson, J. H Laycock, A. Onions, R. L. McLeod, Aug. 7th; P. J. A. Fleming, T. A. Priestly, S. W Hedgcock, Aug. 10th; P. F. Cormack, J. R. Chisman, W. K. Rose, Aug. 11th; C. A. Kelly, A. J. Snetsinger, Aug. 12th; J. B. Boyter, W. H. Sawyer, F. W. Radford, Aug. 13th; W. J Heyland, J A. Kelyrack, K. L. Gomm, C. C. Fountain, F. Thornton, Aug. 14th.

The following are granted temp. commns. as Sec. Lts. (A. and S.) :—O. F. Allcock (late Lt., Dur. L.I.), and to be Hon. Lt., May 17th; S. Le R. Switzer, June 26th; G. D. Harle (temp. Lt., Rif. Brig.), and to be Hon. Lt., July 7th; W. Mackenzie (Capt., N.Z.C.D.), and to be Hon. Capt., July 13th; J. K. Kempson (temp. Sec. Lt., Essex R.), July 14th; L. D. Rosewell (temp. Lt., Res. Cav. R.), and to be Hon. Lt., H. Kingsbury (Sec. Lt., R.G.A., Spec. Res.), July 17th; J. Jackson (temp. Lt., Norf. R., T.F.), and to be Hon. Lt., G. Mitchell (Capt., Gord. Highrs.), and to be Hon. Capt., July 24th, T. S. Millear (temp. Sec. Lt., attd. Oxf. and Bucks L.I.); W. P A Robinson, M.C. (Lt., R.F.A.), and to be Hon. Lt., July 27th; J. Wilson (Lt., Ayr Yeo., T.F.) and to be Hon. Lt., J. W. Grant (Lt., E Ont. R., C.E.F.) and to be Hon. Lt, G. A. Burns (Lt., Manch. R., T.F.) and to be Hon. Lt., July 28th; R. J. Bunning (temp. Sec. Lt, Rif. Brig), R. F. Stewart (Sec. Lt., R.G.A., Spec. Res.), G. O. Wood (Lt, W. Rid. R., T.F.) and to be Hon. Lt., J. B. Nelson (temp. Sec. Lt., Glouc. R.), T. A. Grieg (temp. Sec. Lt., attd. Dur. L.I.), J. C. Gunn (Sec. Lt., High. L.I., T.F.), R. A. Pertus (Lt., Can. Forestry Corps, C.E.F.) and to be Hon. Lt., July 29, C. Morries (Sec. Lt., Lpool R., T.F.), J. M. Barlow (Sec. Lt., Lpool R., T.F.), W. M. Wright (temp. Sec. Lt., attd. K.R.R.C.), A. C. Anderson (temp. Sec Lt., High. L.I.), L. B. Duggan (Sec. Lt., Hereford R., T.F.), A. F. Legg (Sec. Lt, Lond. R., T.F.), W. de Bussey (temp. Sec. Lt., York and Lanc. R.), F. D. V. Miller (Lt., Denbighshire Yeo., T.F.) and to be Hon Lt., July 30th; T. W. A. Ratcliffe (Lt., Lond. R., T.F.), and to be Hon. Lt., E M. Matehew (Sec. Lt., R.G.A.), W. Gow (Sec. Lt., R Scots, T.F.), D. J. MacGowan (Lt., Scots. Rif., T.F.) and to be Hon. Lt., J. Nicole (Sec. Lt., Rif. Brig), J. Pratt (Sec. Lt., R.F.A., Spec. Res.), J. D. Muir (temp. Lt., High. L.I.), and to be Hon. Lt., J. Rhodes (Lt., W. York. R., T.F.) and to be Hon. Lt., W. J. Kolosoff, M.M. (Lt., British Columbia R., C.E.F.) and to be Hon. Lt., L. Belloc (Lt., R.E.) and to be Hon. Lt., G. A. Raudolph (Lt., Som. Yeo., T.F.) and to be Hon. Lt., C. R. Sharpe (temp. Sec. Lt., Middx. R.), July 31st; H. H. Heal (Lt., Quebec R., C.E.F.) and to be Hon Lt., Aug. 4th; C. M. Moore (temp. Lt., R. Fus.) and to be Hon. Lt., Aug. 7th; F. W. V. Ellvers temp. Lt., R.F.A.) and to be Hon. Lt., G. E. Tennant (Lt., Yorks Hussars Yeo., T.F.) and to be Hon. Lt., B. Lockey (Lt., Lpool R., T.F.) and to be Hon. Lt., Aug. 8th; R. H O'Reilly (Lt., Can. Engrs.) and to be Hon. Lt., Aug. 9th; H. H. Wilson, J. J. Laing (temp. Lt., R.F.A.) and to be Hon. Lt., Aug. 10th; R. H. F. de V. S. Somerset, D.S.O. (Lt., C. Gds., Spec. Res.) and to be Hon. Lt., Aug. 11th; H. B. Elwell (Lt., Shrops. L.I., T.F.) and to be Hon. Lt., Aug. 12th; R T. O. Hawthorne (temp. Sec. Lt, Dur. L.I.), Aug. 13th; A. V. Farrier (Lt., D. Corn. L.I., T.F.), and to be Hon. Lt., D. D. A. Mackay (Lt, R.E., T.F.), and to be Hon. Lt., Aug. 14th; H C. Saunders, M.M. (Lt., British Columbia R., C.E.F.), and to be Hon. Lt., C. J. Rhind (Lt., R.F.A., Spec. Res.), and to be Hon. Lt., Aug. 15th; G. W. Birkinshaw, Aug. 21st; C. W. Noel, Aug. 29th, and sen. without pay from June 26th).

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A.) :—M. A. Watts, June 5th; R. L. C. Royle, June 8th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A. and S.) :—C. E. James, June 7th; O. E. Coleman, July 19th; W. A. Deakin, Aug. 6th; D. C. Fleischer, Aug. 12th; H. Hammond, J. B. Stockbridge, Aug. 21st; R. Bower, G. W. Hills, Aug. 23rd; A. G. Harrison, Aug. 24th.

The following Prob. Flt. Officers (late R.N.A.S. are granted temp. commns as Sec. Lts. (A. and S.) :—T. R. A. May, A. H. Mills-Adams, G. D. Scott, J. W. Taylor, July 3rd; R. H. Cross, July 5th; F. W. Dodman, H. R. F. Richardson, L. G. Stern, D. P. Brennan, R. C. Pretty, R. H. Rose, July 15th; A. G. White, July 18th; H. Newsham, D. B. McColl, J. R. Smith, G. L. Stroud, July 19th; B. J. E. Anson, H. A. Myott, July 22nd; H. I M. Monk, D. B. Johnston, W. A. Crick, D. Bancroft-Aitchison, W. A. R Pepper, July 27th; T. C. Black, July 29th; J. Sellers, H. J. McQueen, July 30th; E G. Fullerton, J. W. Hartley, July 31st; E. A. Freitag, Aug 1st; T. D. Vezina, H. Woodruff, C. A. Backeberg, J. C Bottomley, W. H. Davis, L. V. Russell, L. P. Davies, F. C. Salmon, Aug. 2nd; R. Burgess, E. G.

Ralph, Aug. 3rd; L. N. Bissell, G. A. Hodgetts, R. J. Gee, Aug. 4th; J. T. J. McA'Nulty, Aug. 7th; H. J. Bradley, G. Todd, Aug. 8th; C. P. Durkin, E. Sykes, J. C. Sorley, J. M. Stevenson, C. M. Le Moine, J. A. Simmers (Aug. 9th; H. C. Austin, L. P. Worthington, Aug. 10th, F. J. Ellis, G. H. Smyth, Aug 11th, R. V. Curtis, Aug 12th; J. E. Mann, Aug. 13th.

H. W. Freshney is granted a temp. commn. as Sec. Lt. (K.B.), Aug. 20th.

Sec. Lt. H. G. Hall (formerly 14th Lpool R.) is granted a temp. commn. as Lt. Obsr Officer, from (A. and S.), May 7th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—L. R. Chandler, R. N. G. Macey, E. Mason, J. Potter, R. G. Vernon, C. H. Wilcox, G. F. Wilson, Aug. 27th; A. E. Clark, J. S. Ferguson, R. Kelly, A. Fairhurst, W. H. S. Kingsland, Capt. J. Knight, G. A. O'Sullivan, G. Woolf, A. V. W. Church, Aug. 28th; N. Abram, Aug. 29th; R.O. Machin, S. D. A. Partridge, G. L. Parker, F. Buchanan, Aug. 30th; C. McD. de Nobriga, A. B. Macdonald, R. E. Player, F. H. Littman, C. R. Palmear, J. Turnbull, G. Grisdale, S. A. Simpson, O. S. Winfield, J. H. Vickers, E. R. Hargreaves, C. O. Lockey, W. J. Wreford, E. B. Kent, H. S. Cook, H. Lovelady, H. H. Hancock, C. F. Currington, C. Fletcher, W. S. Hedley, F. P. Pitt, L. F. Williamson, C. Radcliffe, M. B. Henselwood, T. R. Young, J. W. Watkins, Aug. 31st; E. Haskins, H. G. Holmes, E. A. Hardman, W. J. Tremellen, R. V. Watson, J. C. Petty, E. Peacop, Sept. 4th.

The following relinquish their commns. on ceasing to be empld.:—Sec. Lt. (Hon. Lt.) J. Garrett (Lt., Can Cav. R.), July 19th, Capt. (temp. Maj.) W. A. Bishop, V.C., D.S.O, M.C., (Capt., Can. Light Horse), Aug. 5th; Capt. R. A. Archer, M.C. (Capt., R.F.A.), Aug. 8th; Lt. A. Richardson (Lt., Essex Yeo.), Aug. 17th.

Lt. R. K. Mackenzie relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lt., May 4th (substituted for notification in "Gazette," May 3rd.

The following Lts. relinquish their commns. on account of ill-health and are granted the hon rank of Lt.:—F. N. Grimwade, R. J. Warner, Sept. 7th

Lt. L. W. Thompson (Lt. Middx. R., T.F.) relinquishes his commn. on account of ill-health contracted on active service, Sept. 7th.

Lt. H. G. L. Fletcher relinquishes his commn., having been found permanently unfit for further instruction as Pilot or Obsr., Sept. 7th.

The following Sec. Lts. relinquish their commns., having been found permanently unfit for further instruction as Pilots or Obsrs.:—F. B. Clarke, J. W. Hamel, J. M. Holloway, F. J. Petherick, W. Thompson, Sept. 7th.

The notification in "Gazette," Aug. 29th, concerning C. Barwell is cancelled.

The notification in "Gazette," July 9th, concerning S. T. Pye is cancelled.

The notification in "Gazette," Aug. 23rd, concerning Sec. Lt. W. L. Dawson is cancelled

The notification in "Gazette," Aug 27th, concerning Sec. Lt. J. D. Taylor is cancelled.

The notification in "Gazette," Aug. 23rd, concerning Lt. C. F. Kelsch is cancelled.

The surname of Sec. Lt. A. W. Davison is as now described, and not as in "Gazette," June 28th.

The date of appt. of the following Lts. (Hon. Capts.) as temp. Capts. (A.) is June 5th, and not as in "Gazette," July 23rd:—J. W. B. Grigson, W. H. Strettel-Miller.

ADMINISTRATIVE BRANCH.—Lt. (Hon. Capt.) R. E. C. Knight-Bruce to be temp. Maj. while empld. as Maj., Aug 28th.

Lts. to be temp. Capts. while empld as Capts.:—(Hon. Capt.) G. Davies, H. Richardson, May 30th; A. McC. Wilson, Aug. 9th.

Sec. Lts. to be temp. Capts. while empld. as Capts.:—H. H. Wrong, June 1st; J. Warner-Jones, June 19th.

Sec. Lts. to be temp. Lts. while empld. as Lts.:—S. N. Cooke, A. C. F. Hill, May 15th.

Lts. (A.) to be Lts.:—(Hon. Capt.) H. G. Ford, and to be Hon. Capt., May 15th; W. B. W. Clarke, June 27th; A. E. Dyer, Aug. 26th.

Lt. W. R. W. Henderson to be Lt., from (A. and S.), Aug. 27th.

Lts. (O.) to be Lts.:—H. M. Tysoe, April 8th; A. C. Dent, J. M. A. Ewer, H. W. Hill, T. A. M. S. Lewis, M.C., May 30th.

E. R. Wood (Lt., Nova Sco. R., C.E.F.) is granted a temp. commn. as Lt., July 9th.

Sec. Lt. V. Lowe (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt., April 18th

The following are granted temp. commns. as Sec. Lts., and to be temp. Lts. whilst specially empld.:—G. D. G. Hake (Sec. Lt. ret. pay), R. N. Tweedy, Sept. 2nd.

The following are granted temp. commns. as Sec. Lts.:—N. C. Clements, R. G. B. Blanchard, C. G. Butler, C. W. Cornell, H. Dawes, C. Duffy, A. E. Edwards, S. H. Ewins, B. G. Fletcher, G. F. Henderson, F. W. Johnson, E. J. Jordan, D. L. Kane, R. J. Kelso, F. H. Lake, N. W. Lamb, L. M. Lawlor, J. A. Moore, C. C. Newman, H. M. Russell, C. R. Orchard, W. Shaw, J. J. Somerville, T. H. Sutherland H. G. Wallis, J. W. Warren-Foster, J. W. Watts, P. Webster, C. W. Whitworth, Sept. 2nd.

The following relinquish their commns. on ceasing to be empld.:—Capt. (temp. Maj.) W. H. Horden, Aug. 17th, Sec. Lt. J. C. Russell-Parsons, Sept. 7th.

Lt. S. H. W. Gibbs relinquishes his commn. on account of ill-health, and is granted the hon rank of Lt., Sept. 7th.

The following Sec. Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Sec. Lt.:—A. O. Collins, W. S. Farley, E. I. Levy, Sept. 7th.

Sec. Lt. G. S. C. Hill relinquishes his commn. on account of ill-health, Sept. 7th.

Sec. Lt. N. C. Scott resigns his commn. to resume medical studies, and is granted the hon. rank of Sec. Lt., Sept. 7th.

Sec. Lt. R. P. C. Taylor resigns his commn., Sept. 7th.

The notification in "Gazette" Aug. 12th concerning Limbury de Burgh Lewis is cancelled.

The notification in "Gazette" Aug. 2nd concerning Sec. Lt. (temp. Lt.) E. R. Wood is cancelled.

TECHNICAL BRANCH.—Maj. C. G. Smith to be temp. Lt.-Col. while empld. as Lt.-Col., June 21st.

Lt. (temp. Capt.) E. Holloway to be temp. Maj. while empld. as Maj., July 22nd.

Lts. to be temp. Capts. while empld. as Capts.:—J. B. Crabb, R. W. Mitchell, May 13th; H. G. Thornton, from (O.), Sept. 5th.

Sec. Lts. to be temp. Lts. while empld. as Lts.:—A. E. Fincher-Brookes, July 1st; (Hon. Lt.) P. J. Whitehead, July 4th.

Sec. Lt. (temp. Lt.) J. E. Tod retains his temp. rank while empld. as Lt., from (S.O.), July 1st.

Lt. E. N. Holstius to be Lt. from (Ad.), May 30th.

Lt. F. Surgey to be Lt., from (A. and S.), July 16th.

Lts. (O.) to be Lts.:—D. M. Baird, R. Barnes, M. B. Brown, L. W. Mather, J. L. Morgan, G. D. Morris, W. H. Skinner, May 30th; E. N. Gregory, July 11th.

The following are granted temp. commns. as Sec. Lts.:—A. S. Kessler Aug. 15th; H. D. Staniar, and to be temp. Lt. while specially empld., F. A. Grimwood, Sept. 2nd

Sec. Lt. A. Ford relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., Sept. 7th.

MEDICAL BRANCH.—The following are granted temp. commns. as Capts.:—W. G. Helsby, Sept 2nd; A. Bradford, Sept. 4th.

DENTAL BRANCH.—A. Williams is granted a temp. commn. as Lt., Sept. 2nd.

MEMORANDUM.—Lt. J. T. Kerr to be temp. Capt. (without pay and allowances of that rank) whilst empld. as Station Adjt., Aug. 31st.
WAR OFFICE, Sept. 9th.

REGULAR FORCES.—ROYAL REGT. OF ARTILLERY.—R.G.A.—The undermentioned relinquish the actg. rank of Maj.:—Lt. H. J. Casey, M.C., T.F., on ceasing to comd. an Anti-Aircraft Batt., July, 5th, 1918.

OVERSEA FORCES.—CANADA.—COMMANDS AND STAFF.—GENERAL STAFF.—G.S.O., 1st Gr.—Temp. Lt.-Col. W. A. Bishop, V.C., D.S.O., M.C., D.F.C., Can. Cav., Aug. 5th, 1918.

FROM THE COURT CIRCULAR.

WINDSOR CASTLE, Sept. 4th.

The King held an Investiture in the Quadrangle of the Buckingham Palace.

His Majesty decorated the following with the Victoria Cross:—

Lt. (then Sec. Lt.) ALAN MCLEOD, R.A.F.

Whilst flying with his observer (Lt. A. W. Hammond), attacking hostile formations by bombs and machine-gun fire, he was assailed at a height of 5,000 ft. by eight enemy triplanes, which dived at him from all directions, firing from their front guns.

By skilful manœuvring he enabled his observer to fire bursts at each machine in turn, shooting three of them down out of control.

By this time Lt. McLeod had received five wounds, and whilst continuing the engagement a bullet penetrated his petrol tank and set the machine on fire.

He then climbed out on to the left bottom plane, controlling his machine from the side of the fuselage, and by side-slipping steeply kept the flames to one side, thus enabling the observer to continue firing until the ground was reached.

The observer had been wounded six times when the machine crashed in "No Man's Land," and Sec. Lt. McLeod, notwithstanding his own wounds, dragged him away from the burning wreckage at great personal risk from heavy machine-gun fire from the enemy's lines.

This very gallant pilot was again wounded by a bomb whilst engaged in this act of rescue, but he persevered until he had placed Lt. Hammond in comparative safety, before falling himself from exhaustion and loss of blood.

* * *

The King invested the following officer with the insignia of the Distinguished Service Order:—

Maj. BERTINE SUTTON, Yeo., attd. R.A.F.

His Majesty then conferred decorations as follows:—

MILITARY CROSS.

Capt. ERIC BEADON, A.S.C., attd. R.A.F.
Capt. ROY CHAPPELL, R.A.F.
Capt. TRYGGVE GRAN, R.A.F.
Capt. JOHN MIDDLETON, R.A.F.
Capt. FRANCIS MOLLER, R.A.F.
Capt. JOHN PUGH, R.A.F.
Lt. THOMAS FINDLEY, C.F.A., attd. R.A.F.
Lt. CHARLES HARRISON, R.A.F.
Lt. HOMER SCUTT, The King's (Lpool R.), attd. R.A.F.

THE BOARD OF TRADE SILVER MEDAL FOR SAVING LIFE AT SEA.

Capt. (then Lt.) GEORGE HODGSON, R.A.F.

In May, 1917, Lt. Hodgson, another lieutenant, a Leading Mechanic and a Wireless Telegraphist were flying on a seaplane at a height of 1,200 ft., when they sighted an object on the water. They immediately descended, and the object was discovered to be an upturned float with two men on it.

In spite of the rough sea, they landed their plane on the water close to the float, and, on a second attempt, succeeded in rescuing the men—an officer and an air mechanic who had been without food or water for five and a half days.

The seaplane was so damaged through landing in the heavy sea that it was unable to rise, and they, therefore, taxied for three miles with the boat leaking badly and shipping quantities of water over the bows. When the tail of the machine was filled with water they made distress signals, as a result of which assistance was obtained, and all the men, together with the seaplane, were brought to land.

OFFICIAL COMMUNIQUES.

NAVAL.

SEPT. 4th.—During the period Aug. 26th-Sept 1st, R.A.F. contingents working with the Navy, have carried out successful bombing raids over Ostend-Zeebrugge and approximately 13 tons of bombs have been dropped with excellent results. Large fires were started; two direct hits obtained on an anti-aircraft battery and many bursts in the docks.

In home waters anti-submarine, reconnaissance and offensive patrols have been maintained.

In engagements with enemy machines two were destroyed and another driven down out of control.

All our machines returned safely.

In the Ægean a constant reconnaissance of the Dardanelles has been maintained.

Constantinople was bombed on the night of Aug. 25th-26th. The aerodrome at Galata, and the seaplane base at Gallipoli and Chanak were also heavily bombed by British machines in co-operation with a Greek unit.

Constantinople was again bombed on the night of Aug. 27th-28th with good results. The attack was directed against the Arsenal and Dockyard on Galata Pera side; War Office and barracks adjoining on Stambul side.

One of our machines failed to return.

MILITARY.

G.H.Q. COMMUNIQUÉS.

SEPT. 3rd, 8.17 p.m.—On Sept. 3rd (?) our aeroplanes worked all day in front of the advancing battle line, behind which our observation balloons followed closely. Our aviators were frequently attacked by large formations of hostile machines, but persisted in their various tasks.

Targets offered by the retiring Germans were reported to our artillery, contact with our infantry and Tanks was maintained, the concentrations of hostile troops and transport along the road were engaged with bombs and machine-guns, hostile anti-Tank guns were

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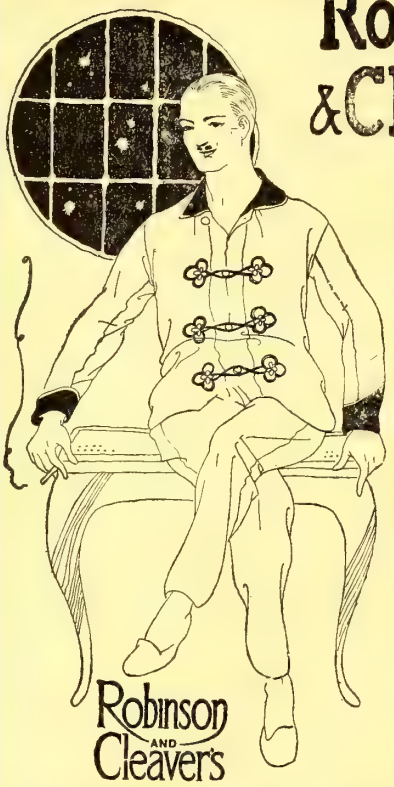
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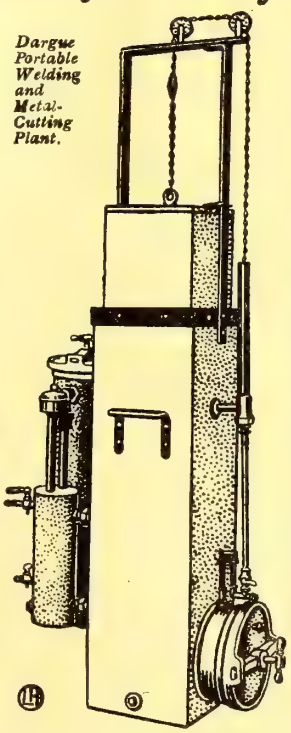
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silenced, and supplies of small-arm ammunition were dropped to our infantry in the forward zone.

Many aerial encounters took place. We destroyed 10 German machines and drove two down out of control.

Our missing machines amounted to 20.

Twenty-four tons of bombs were dropped during the day and the night following.

Sept. 4th, 8.34 p.m.—On Sept. 3rd fine weather, with fair visibility, enabled our aeroplanes and balloons to co-operate effectively in the advance.

The fighting zone and the enemy's back areas were kept under close observation throughout the day. Contact and low-flying patrols were carried out along the battle front, while our artillery machines signalled targets to our guns, and reported the effect of their fire.

Twenty-one tons of bombs were dropped during the day, and another 21 tons at night.

Our aviators destroyed 19 enemy machines and drove seven down out of control. Four enemy balloons were brought down in flames.

Ten of our machines are missing.

Sept. 5th, 8.15 p.m.—Much reconnaissance and photographic work was accomplished by the Air Force on September 4th and a large number of artillery and contact patrols were carried out. The weight of bombs dropped by us during the day was 23 tons. No bombing was possible after dark.

Enemy machines working in large formations on the German side of the lines showed considerable activity. Twenty-five hostile machines were brought down by our airmen, and no less than nine balloons were shot down in flames. In addition, 14 hostile machines were driven down out of control.

Sixteen of our machines are missing. One of our machines reported as missing in the fighting of September 2nd has since returned.

In the course of the weeks which have elapsed since the commencement of our offensive on August 8th, 465 enemy machines have been brought down by our airmen, their destruction being in every case clearly established. In addition, the total of enemy machines proved to have been driven down out of control (many of which must have actually crashed) is exactly 200. The above figures are exclusive of the considerable number of enemy machines brought down by gun fire from the ground. Sixty-one German balloons have been set on fire; 911½ tons of bombs have been dropped by us. Practically the whole of the air fighting has taken place on the enemy's side of the line.

The number of our machines which have failed to return during this period is 262.

Sept. 6th, 10.10 p.m.—On Sept. 5th the weather was fine, but rather cloudy. Our aeroplanes and balloons were able to work throughout the day, reporting the enemy's movements and dispositions, photographing his defences, harassing his troops with machine-gun fire and bombs, and observing the fire of our artillery.

Enemy aircraft, flying in large formations on the German side of the line were active at times, especially in the Cambrai region.

Twenty-three hostile machines were destroyed in air fighting, and 14 others were driven down out of control. Three German balloons were brought down in flames.

Thirteen of our aeroplanes are missing.

During the day 21 tons of bombs were dropped by us on various targets. No flying was possible at night.

Sept. 7th, 7.45 p.m.—Eleven German aeroplanes were brought down on Sept. 6th in air fighting and 12 driven down out of control. One enemy balloon was destroyed.

Five of our machines are missing.

Observation for the artillery was continued both by aeroplanes and balloons. Some valuable reconnaissances were carried out by our machines and a large number of photographs were taken, while our balloons reported much useful tactical information.

During the day and the following night 32 tons of bombs were dropped by our airmen, the railway connections at Armentières, Lille, Douai, Derain, Cambrai, and St. Quentin being heavily attacked.

All our night-flying machines have returned.

Sept. 8th, 8.10 p.m.—Clouds and rain storms limited work in the air on Sept. 7th, but a good deal of artillery observation was carried out, as well as reconnaissances and contact patrols.

Eight hostile machines and one balloon were destroyed by our aviators.

Three of our machines are missing.

Thirteen tons of bombs were dropped by us during the 24 hours.

Our night bombing machines all returned safely.

Sept. 9th (?) p.m.—On Sept. 8th the sky was overcast, and there were frequent rainstorms, with high wind.

Our aeroplanes carried on their work for the artillery with difficulty, and also accomplished a number of reconnaissances and contact patrols. Five tons of bombs were dropped during the day. There was no flying at night.

The activity of the enemy's machines was very slight, but we brought down five and drove two down out of control.

None of our machines is missing.

War Office Communiqué.

Sept. 4th.—The G.O.C. Macedonia reports:—

On Sept. 2nd two hostile aeroplanes were destroyed.

Sept. 4th.—The G.O.C. Palestine:—

Since Aug. 14th activity has in the main been confined to aerial bombing raids against the enemy establishments on the Hedjaz Railway, patrol encounters east of the Jordan, and raiding enterprises against the enemy's advanced lines.

Sept. 8th.—The G.O.C. Italy reports:—

Since Aug. 25th eight enemy aircraft and one captive balloon have been destroyed. One of our machines is missing.

Sept. 9th.—The G.O.C. Macedonia reports:—

On Sept. 3rd six of our scouts, engaging an equal number of enemy machines near Lake Doiran, crashed four of them.

Another hostile aeroplane was destroyed near Rupel on Sept. 4th, and an enemy observation balloon was brought down behind our lines on the 3rd inst.

AIR FORCE.

Air Ministry Communiqués.

The following dispatches have been received from the Headquarters of the R.A.F., Independent Force, in France:—

Sept. 3rd.—In addition to attacks already reported on hostile aerodrome at Bühl on the morning of the 2nd inst., our squadrons on the afternoon of the 2nd inst. again attacked the same objectives. Very good results were obtained. More hangars were hit and a fire caused.

All our machines returned safely.

On the night of the 2nd-3rd our squadrons dropped a total of 17 tons of bombs. Bühl aerodrome was again heavily attacked, and the following targets bombed:—The Burbach works, the railways at Saarbrücken and Ehrang (north of Trèves), trains, and Boulay aerodrome.

Several fires were started at Bühl, three hangars were demolished, and direct hits were obtained on many others. Attack was carried out from 300-900 ft. Over 15 tons of bombs were dropped on this aerodrome in 24 hours. The railways at Ehrang were attacked from a height of 90 ft., and every bomb obtained a direct hit. A fire was started in the Burbach works and very good bursts observed.

All our machines returned safely.

Sept. 4th.—On the afternoon of the 3rd inst., our squadrons carried out a most successful attack on the hostile aerodrome at Morhange (Lorraine). Several hangars received direct hits, and two hostile machines on the ground were blown up. Extent of damage confirmed by photographs.

All our machines returned safely.

On the night of the 3rd-4th inst., our squadrons again heavily bombed the aerodrome at Morhange. Several more hangars were hit, and some fires started.

The hostile aerodrome at Boulay and the blast furnaces at Esch (east of Longwy) were also attacked. Direct hits were obtained on the blast furnaces, fires started at Boulay.

All our machines returned safely.

On the morning of the 4th inst., our squadrons attacked the aerodrome at Morhange, this being the third attack within 24 hours. Excellent shooting was again made, and at least seven hangars received direct hits. All bombs were seen to burst well.

One squadron attacked Bühl aerodrome with very good results.

All our machines returned safely.

Sept. 7th.—On the night of the 6th-7th inst. our squadrons carried out attacks against two hostile aerodromes. Fires were caused, but observation of results was hindered by weather conditions, as were operations generally. All our machines returned.

On the morning of the 7th inst. our squadrons attacked the railways at Ehrang and the chemical works at Mannheim. Good bursts were observed on and beside the railway lines at Ehrang. Fierce opposition was met with in the raid on Mannheim, but, despite this, the objective was reached and successfully bombed. Eight direct hits and many other good bursts were observed on the chemical works.

Our squadrons fought largely superior numbers of enemy aeroplanes both before and after reaching the objective. One squadron had a hard, continuous fight for a distance of 70 miles before reaching its objective and the fight continued for another 70 miles on the way back. Over two tons of bombs were dropped on Mannheim. As a result of the fighting one enemy aeroplane was destroyed, and two more hostile machines were driven down out of control.

Four of our machines are missing.

THE CASUALTY LIST.

MILITARY.

Reported Sept. 4th.

Australian Force.—Accidentally Killed.—Ferguson, Sec. Lt. D. A., F.C.

Wounded.—Howard, Sec. Lt. F., F.C.; Smallwood, Lt. R. G., F.C.

Reported Sept. 5th.

Previously reported Missing, now reported Killed.—Money, Sec. Lt. D. G., R.F.C.

The following Officer, who was a prisoner in Germany, has now arrived in England:—

Hume, Lt. S. S., Yeo., attd. R.F.C.

Reported Sept. 7th.

Canadian Forces.—Wounded.—Mawdesley, Lt. F. J., Cent. Ont. R., attd. R.A.F.

Previously reported Missing, now reported by the German Government Killed or Died of Wounds.—Doidge, Lt. E. L., Manch. R., attd. R.A.F.

Missing.—Dore, Lt. W. H., Sask. R., attd. R.A.F.

Reported Sept. 9th.

Canadian Contingent.—Missing.—Belliveau, Lt. A. H., Can. For. Corps., attd. R.A.F.

The following officers, who were prisoners in Germany, have now arrived in England:—

Daly, Capt. A. P. V., Conn. Rang., attd. R.F.C.; Neill, Lt. J. W. F., R. Scots, attd. R.F.C.

Reported Sept. 10th.

Australian Force.—Previously reported Missing, now reported Killed.—Martin, Lt. C. H., F.C.

Accidentally Killed.—Grove, Sec. Lt. R. H., F.C.

Wounded.—Howard, Sec. Lt. S., F.C.

Missing.—McCleery, Lt. E. P. E., F.C.

Canadian Force.—Wounded.—Stayner, Lt. C. St. C., N.B. R., attd. R.A.F.

AIR FORCE.

Reported Sept. 5th.

Killed.—MacDonald, Lt. R. C., R.F.A. (S.R.) and R.A.F.
Mossop, Lt. C. S., R.A.F.
Paxton, Sec. Lt. G. A., R. Suss. R. and R.A.F.
Renton, Sec. Lt. E. G., R.A.F.
Shepherd, Sec. Lt. O. D., R.A.F.
Stewart, Sec. Lt. E. R., R.A.F.
Weir, Sec. Lt. C. G., R.A.F.
Winter, Sec. Lt. R. R. C., Durh. L.I. and R.A.F.

Cadets Killed.—Barber, W. F.
Corbett, W. L.
Denny, F. G.
Gillies, W.
Ling, W. F. E.
Mackay, J. W.
Tracey, E. O.
Tyson, T. M.

Wounded.—Baxter, Sec. Lt. A. J., Linc. R. and R.A.F.; Gordon, Sec. Lt. E. C., R.A.F.; Keen, Maj. A. W., M.C., R.A.F.; Kesterton, Sec. Lt. L. G., R.A.F.; Kinney, Lt. M. C., R.A.F.; Markham, Lt. W. H., Manch. R. and R.A.F.; Pelham, Sec. Lt. W. C., R.A.F.; Ramage, Sec. Lt. L. W., Glouc. R. and R.A.F.; Rowsell, Sec. Lt. L. F., R.A.F.; Robb, Capt. J. M., Northd. Fus., attd. R.A.F.; Shearing, Sec. Lt. E. A., R.A.F.; Lees-Smith, Maj. H. S., R.A.F.; Whiteman, Sec. Lt. A. K., R.A.F.

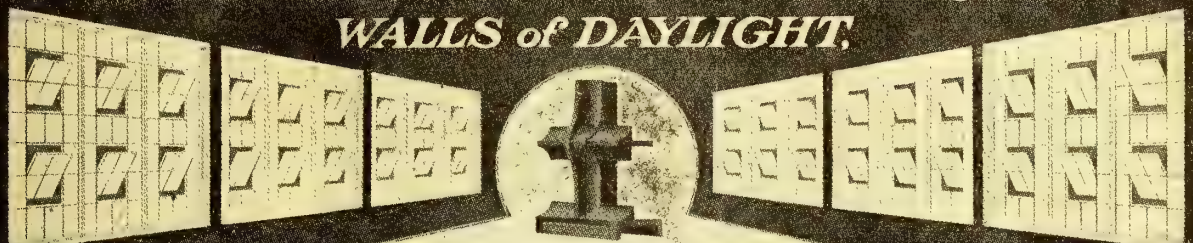
Missing.—Arthur, Lt. T. J., R.A.F.; Cotton, Sec. Lt. E., R.A.F.; Hill, Sec. Lt. G. A. R., R.A.F.; Hills, Sec. Lt. J., R.A.F.; Johnson, Lt. C. S., R.A.F.; Kilbourne, Lt. W. H., R.A.F.; Lawe, Lt. A. G., Dorset R. and R.A.F.; MacDonald, Lt. K. M., Northd. Fus. and R.A.F.; Partridge, Lt. A. T., R.A.F.; Payton, Lt. J. L., R.F.A. and R.A.F.; Pollard, Lt. W. H., R.A.F.; Smith, Lt. D. E., R.A.F.; Stepheus, Sec. Lt. D. E., R.A.F.; Thorpe, Sec. Lt. C. E., R.A.F.

Reported Sept. 6th.

Killed.—Dickson, Sec. Lt. J. H., R.A.F.
Hall, Lt. J. F. A., E. Yorks R., attd. R.A.F.

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Millar, Sec. Lt. A. F., R.A.F.
Savage, Lt. H. W., R.A.F.
Smith, Sec. Lt. G., R.A.F.
Wald, Lt. A., R.A.F.

CADETS KILLED.—Barton, H. W.
Buckley, H.
Godwin, A. W. W.
Harrison, A. M.
Macilroy, T. S.
Nord, H. A.
Smith, J. L.
Smith, W. K.
Wicherley, G.

DIED OF WOUNDS.—Hopton, Sec. Lt. H. W., R.A.F.
West, Sec. Lt. S. J., R.A.F.

WOUNDED.—Atkinson, Sec. Lt. H., R.A.F.; Brock, Lt. C. G., R.A.F.; Buist, Lt. A. C. S., Gord Highrs. and R.A.F.; Curtis, Lt. L. R., R.A.F.; Frederichsen, Sec. Lt. P., R.A.F.; Gibson, Lt. A. R., R.A.F.; Hartford, Sec. Lt. T., R.A.F.; Isaac, Lt. K. J., R.A.F.; Jackson, Lt. R. W., R.F.A. (S.R.) and R.A.F.; Longbottom, Lt. H. F., R.A.F.; Muirhead, Lt. C. F., R.A.F.; O'Meara, Sec. Lt. B. J., R.A.F.; O'Sullivan, Lt G. R., R.A.F.; Shirley, Sec. Lt. A. E., R.A.F.; Tyreman, Lt. C. H., R.A.F.; Williams, Sec. Lt. P. J., R.A.F.; Williams, Sec. Lt. R. L., R.A.F.

MISSING.—Davies, Sec. Lt. J. H., R.A.F.; Davis, Lt. R. H., R.A.F.; Dunlop, Sec. Lt. J. M., R.A.F.; Hazen, Lt. T. D., R.A.F.; Ingram, Capt. R. S. S., R.A.F.; Johnstone, Lt. J. K., R.A.F.; Latimer, Capt. D., M.C., R.A.F.; Meyer, Sec. Lt. O. F., R.A.F.; Noel, Lt. T. C., M.C., K. O. Sco. Bord. and R.A.F.; Roberts, Lt. C. H., R.A.F.; Schorn, Sec. Lt. F. F., R.A.F.; Venter, Capt. C. J., R.A.F.; Woodend, Sec. Lt. C. W., R.A.F.

Reported Aug. 7th.

KILLED.—Agnew, Lt. J., R.A.F.
Cave, Sec. Lt. J. E., R.A.F.
David, Lt. J. E., R.A.F.
Royle, Capt. L. V. A., R.A.F.
Shuttleworth, Sec. Lt. R. W., Lanc. Fus. and R.A.F.
Somerville, Sec. Lt. P. T., R.A.F.
Wilson, Lt. H. E., R.A.F.

DIED OF WOUNDS.—Calvert, Sec. Lt. E., R.A.F.

WOUNDED.—Beck, Lt. J. G., R.A.F.; Carson, Lt. W. F., R.A.F.; Cutler, P.F.O. R. O., R.A.F.; Hubbard, Lt. W., R.A.F.; Hyslop, Sec. Lt. J. B., R.A.F.; Marrow, Capt. E. T., R.A.F.; Phear, Lt. H. W., R.A.F.; Shaw, Sec. Lt. G. L., R.A.F.; Solomon, Lt. S. A. R., R.A.F.; Tarbolton, Lt. J. S., R.A.F.

MISSING.—Alexander, Sec. Lt. T. M., R.A.F.; Claxton, Lt. W. G., R.A.F.; Curtis, Sec. Lt. H. C., R.A.F.; Drinkwater, Lt. E. O., R.A.F.; Duthie, Sec. Lt. D. O., R.A.F.; Glasse, Lt. E. S., R.A.F.; Hales, Capt. J. P., R.A.F.; Locke, Sec. Lt. E. G., R.A.F.; McCallum, Lt. J. R. R. G., R.A.F.; Porter, Sec. Lt. A. C., R.A.F.; Scott, Sec. Lt. H., R.A.F.; Tupman, Sec. Lt. A. L. Sher. For. and R.A.F.

CADETS KILLED.—Beet, G. W. A., Brown, C. E., Brown, C. D., Carradine, W. G., Fisher, O., Graham, V. W., Harris, A. G., Mathie, T.

Reported Sept. 9th.

KILLED.—Bell, Sec. Lt. C. C. M., R.A.F.
Cavanagh, Sec. Lt. J. C., R.A.F.
Fitton, Sec. Lt. W., M.M., Lan. Fus. and R.A.F.
Maker, Sec. Lt. W. F., R.A.F.
McLean, Sec. Lt. C., R.A.F.
Robinson, Sec. Lt. F. C., R.A.F.
Rowe, Sec. Lt. M. E., R.A.F.
Bertram-Scott, Sec. Lt. G., R.A.F.

WOUNDED.—Davies, Capt. F. J., R.A.F.; Fraser, Lt. C. N., R.A.F.; Garne, Sec. Lt. S. H. J., R.A.F.; Gibson, Lt. F. E., R.A.F.; Orris, Sec. Lt. F. R., R.A.F.; Stupart, Lt. A. V., R.A.F.; White, Lt. C. C., R.A.F.

MISSING.—Andrews, Lt. J. S., R.A.F.; Brie, Lt. R. A. C., R.A.F.; Burnham, Lt. M. E., R.A.F.; David, Sec. Lt. C. K., R.A.F.; Hitchcock, Sec. Lt. C. G., R.A.F.; Home-Hay, Capt. J. B., M.C., D.F.C., Arg. and Suthd. Highrs. and R.A.F.; Leed, Sec. Lt. D., R.A.F.; McIntyre, Lt. L. H., R.A.F.; Mackay, Capt. E. A., M.C., D.F.C., R.A.F.; Mullen, Lt. A. G. L., R.A.F.; Pickard, Sec. Lt. C. G., R.A.F.; Smith, Lt. G. H. B., R.A.F.; Valentine, Lt. J., R.A.F.

CADETS KILLED.—Fesser, C. F.
Garden, D.
Haskew, C. C.
Jennings, R.
Simpson, J.
Wallace, G. R.
White, E. A.
Whitley, T. T.

Reported Sept. 10th.

KILLED.—Bravery, Lt. F. J., R.A.F.
Buckland, Sec. Lt. C. J., R. Fus. and R.A.F.
Campbell, Lt. N. C. S., R.A.F.
Heath, Lt. G., R.A.F.
Macbeth, Lt. R. E., R.A.F.
Packer, Sec. Lt. J., R.A.F.
Phillips, Capt. T., R.A.F.
Westmoreland, Sec. Lt. E. H., R.A.F.
Wolstenholme, Lt. J. B., R.A.F.

WOUNDED.—Bishop, Sec. Lt. N. F., R.A.F.; Calrow, Lt. R., R.A.F.; Duthie, Sec. Lt. G. A., R.A.F.; Finney, Lt. J. L., R.A.F.; Jeffries, Capt. T. G., R.A.F.; Maclean, Sec. Lt. W. J., R.A.F.; Marshall, Sec. Lt. F., R.A.F.; Prentice, Sec. Lt. G. A. F., R.A.F.

MISSING.—Collier, Sec. Lt. D. C., R.A.F.; Glazebrook, Lt. R. F., R.A.F.; Gilmour, Capt. S. G., R.A.F.; Gwyer, Sec. Lt. N. E., R.A.F.; Hilton, Sec. Lt. T. R., R.A.F.; McCarthy, Sec. Lt. T., R.A.F.; Rees, Sec. Lt. E. E., R.A.F.; Somerville, Sec. Lt. C. W., R.A.F.; Stott, Sec. Lt. J., R.A.F.; Taylor, Sec. Lt. T. G., R.A.F.; Taylor, Sec. Lt. E., R.A.F.; Trimble, Sec. Lt. A. V., R.A.F.

CADETS KILLED.—Finney, G.
Gardner, F. A.
Gibbs, D.
McGibbon, J.
Milward, J.
Oughtebridge, R.
Rawlings, C. J. H.
Watson, P. F.

Reported Sept. 11th.

KILLED.—Hewat, Lt. R. A., R.A.F.
Manzetti, Sec. Lt. C. A., R.A.F.
Parlee, Lt. G. W., R.A.F.

DIED OF WOUNDS.—Booker, Maj. C. D., R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Knowles, Sec. Lt. W., R.A.F.
McGee, Sec. Lt. W. R., R.A.F.
Riekie, Lt. H. H., R.A.F.

WOUNDED.—Gillespie, Sec. Lt. W. R., R.A.F.; Imeretinsky, Lt. C. G., R.A.F.; Lewis, Sec. Lt. H. Y., R.A.F.; Oaks, Capt. H. A., R.A.F.; Russell, Lt. G., R.F.A., attd. R.A.F.; Steele, Capt. C. R., York R., attd. R.A.F.; Strudwick, Lt. C. R., R.A.F.; Turnbull, Sec. Lt. D. T., R.A.F.; Weller, Sec. Lt. J. A., R.A.F.; Vickers, Sec. Lt. E., D. of Well. R., attd. R.A.F.

MISSING.—Belloc, Lt. L., R.E. and R.A.F.; Burton, Lt. D. F., Suff. R., attd. R.A.F.; Byrne, Sec. Lt. C. J., R.A.F.; Cartwright, Lt. E., R.A.F.; Dodson, Lt. H. L. M., A.S.C., attd. R.A.F.; Henderson, Sec. Lt. A. B., R.A.F.; Roberts, Lt. H. J. W., R.A.F.; Roy, Sec. Lt. D. C., R.A.F.; Stephens, Sec. Lt. C. H., R.A.F.; Welch, Lt. S. B., R.A.F.; Wyncoll, Sec. Lt. A. W., K.O. (R. Lan. R.), attd. R.A.F.

CADETS KILLED.—Broadhead, F.
Cunningham, R.
Daniel, H. T.
Jennings, E. K. Y.
McLeish, G.
Williams, H. W.

PERSONAL NOTICES.

NAVAL.

ENGAGEMENTS.

LITTLETON—BECHER.—A marriage will take place on Oct. 10th, between Lt. Hugh A. Littleton, D.S.O., R.N.V.R. (formerly flight commander, R.N.A.S.), and Mary, elder daughter of the Archdeacon of Ross and Mrs. J. Becher, at Berehaven, Church, Co. Cork, at 2.30, leave permitting.

NEWTON-CLARE—SWANN.—A marriage has been arranged and will shortly take place between Major E. T. Newton-Clare, D.S.O., Royal Air Force, formerly Squadron Commander, Royal Naval Air Service, eldest son of Mrs. W. H. Haworth, of The Ferns, Beckenham, Kent, and Aileen, elder daughter of Major-General J. C. Swann, C.B., The Pickets, Great Missenden, Bucks.

MARRIAGES.

BUCK—NICOLL.—On Sept. 9th, at Highgate Presbyterian Church, Capt. A. F. Buck, R.A.F. (late R.N.A.S.), second son of Dr. and Mrs. Buck, of Harrow-on-the-Hill, was married to Mary, daughter of Mr. and Mrs. Mitchell Nicoll, of Orleans Road, Crouch End.

HOARE—TROUNCE.—The marriage of Capt. J. E. A. Hoare, D.S.C., R.A.F. (Headquarters Staff, Plymouth), only son of Mr. and Mrs. Alfred Hoare, Charlwood, East Grinstead, Sussex, and 37, Fleet Street, London, and Miss Marjorie Gwendoline Trounce, fourth daughter of Mr. and Mrs. S. P. Trounce, Culroy, Truro, took place in St. Mary's Aisle, Truro Cathedral, on Thursday, Sept. 5th.

MANN—JOHNSON.—On Aug. 31st, at St. Columb's Church, Notting Hill, Lt. John George Morris Mann, R.A.F. (late R.N.V.R.), son of the late Mr. and Mrs. A. J. Mann, of Bedford Park, W., was married to Sybil Lucy Johnson, B.A.Lond., only daughter of the late Frederick and Mrs. Johnson, of North Kensington, by the Rev. J. Cartmel Robinson, M.A., assisted by the Rev. G. Lovelace.

MILITARY.

DEATHS.

BARR.—Those who remember THE AEROPLANE in its early days will regret to hear of the death of Mr. Arthur Barr, who was for some time one of the editorial assistants on this paper, and was remarkable for being able to write the most brilliant English on the most unpromising subjects. One of his most extraordinary feats was to write a thoroughly literary report on the accessory exhibits at the Olympia Show of 1914.

Some months before the war Arthur Barr left this paper owing to a breakdown in health, and made a tour in Morocco where, with his usual extraordinary facility, he acquired a most intimate knowledge of the people of the country in a very short time.

On the outbreak of war he enlisted in the Seaforth Highlanders, and after having refused a commission on several occasions, and having been somewhat seriously injured in an accident, he finally came home to take a commission in the Garrison Artillery. He served for a year or so as a gunner officer, and at the time of his death was acting as liaison officer.

Arthur Barr was the son of the late Robert Barr, the famous novelist, and he inherited all his father's brilliance with added ability of his own. He was educated at St. Paul's School and at Exeter College, Oxford. There was no subject about which he did not know a great deal, and on some subjects he was a recognised authority. On architecture in particular he was in the front rank of authorities. By way of a change he began to take an interest in small arms, and became not only an expert rifle shot, but quite an authority on the subject of rifles. When he began to take an interest in aviation he picked up an all-round knowledge of his subject in an amazingly short time, and without the slightest apparent effort to learn anything.

Learning seemed to come to him as a gift and not as a labour. There was no subject he touched which he did not adorn. If he had had ambition he might have been a leader in any walk of life in which he desired to shine. As it was, he was content to know all about a subject without making an effort to thrust his knowledge or his personality on other people. Only his incurable

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modesty prevented his outstanding ability from coming to the front.

Personally he was one of the most lovable of men, and in his own quiet way a very great humorist. In him the King lost a highly efficient officer, the nation has lost one of its most brilliant men, and many of us have lost a very dear friend.—C. G. G.

BRANDON.—Lt. Edgar Brandon, R.A.F., aged 29 years, reported killed on August 11th, was the youngest son of the late Edgar Brandon and Mrs. Brandon, of Newlands, Clapham Road, Bedford. Educated at Bedford School, at the age of 21 years he went to Tasmania, and remained there until 1913. He then went to Ceylon, where he was for some years with the Ceylon and Indian Planters' Company. On returning to England he joined the Inns of Court O.T.C. on September 27th, 1917, afterwards obtaining a commission in the R.A.F. He crossed to France in July.

CARTER.—Maj. Audsley Ralph Carter, R.G.A., attd. R.A.F., who died of wounds on Aug. 28th, was the third and youngest son of Dr. and Mrs. Godfrey Carter, Sheffield. He was 24 years of age.

CAVE.—Sec. Lt. Jasper Edmund Cave, R.A.F. (transferred from Canadian Seaforth Highlanders), late of Rock Creek, British Columbia, who was killed in action on Aug. 14th, was the only son of Edmund and Blanche Cave, of 9, Marble Arch (formerly of St. John's Wood).

CHILD.—Capt. J. M. Child, M.C., Manchester Regt. and R.A.F., whose death was announced last week, was the second son of Mr. and Mrs. Child, of King's Road, Leytonstone. He was 24 years of age, and had always been a keen athlete. He went to Canada and took up banking and mining prospecting. He enlisted in the Canadian Militia, and not being able when war broke out to leave with either the First or Second Canadian Contingent, he came over at his own expense, and obtained a commission in the Durham Light Infantry. As he was not sent to the front, he got transferred to the R.F.C. and soon became familiar with the work. For his work at the front he was mentioned in dispatches, and won the Military Cross, the decoration of Chevalier of the Order of Leopold, and the Belgian Croix de Guerre. Later he succeeded in entering the Regular Army, with a view to making soldiering and flying his profession. He met his death in Scotland after an endeavour to rescue fellow officers from an aeroplane accident.

GARDEN.—Sec. Lt. Kenneth Clinton William Garden, R.A.F., who was killed in a flying accident on Sept. 3rd, was the youngest son of E. W. Garden, Esq., and Mrs. Garden, of St. Heliers, East Hill, Wandsworth. He was 25 years of age.

HARRISON.—The body of Capt. V. W. Harrison, formerly R.F.C., of Worthing, who was drowned in the river Yare at Buckenham Ferry, Norfolk, on September 1st, through a dinghy capsizing, was recovered on September 9th.

KEEN.—News has been received that Major Arthur Willan Keen, M.C., R.A.F., died in France on Sept. 2nd. He was the son of the late Mr. A. T. Keen, J.P., of Harbourne Park, Birmingham, a director of Guest, Keen, and Nettlefolds, Ltd. He took his certificate, No. 2298, on Jan. 17th, 1916, on a Maurice Farman biplane at Catterick Bridge, and was awarded the Military Cross in Aug., 1917, for "gallantry and skill in aerial fighting and in the leading of offensive patrols." He was 23 years of age.

MAHONY.—Sec. Lt. Brian Gerald Mahony, R. Munster Fus., attd. R.A.F., who was accidentally killed on service on Sept. 3rd, of Taneatua, New Zealand, and late Tonga, was 28 years of age, and received his commission in the Munsters in December, 1917.

PAGE.—Capt. Lance St. A. M. Page, Yeomanry, attd. R.A.F., who was killed whilst flying on active service on Aug. 20th, was the only surviving child of the late C. W. H. Page, of Grafton, Ontario, Canada, and of Mrs. Mary Page, 3, East Street, Chelsea, London. He was 28 years of age.

SOTHERN-ESTCOURT.—Lt. A. C. Sothern-Estcourt, R.A.F., was reported killed on Aug. 28th.

He was educated at St. Aubyn's, Rottingdean, and Gresham's School, Holt, Norfolk, from which he gained an open mathematical scholarship at Magdalene College, Cambridge, in Jan., 1912, being also awarded an exhibition by the Fishmongers' Company. Soon after the outbreak of war he joined the Cambridge O.T.C., and received a commission in the Wiltshire Regiment on Nov. 19th, 1914. He was ordered to the front about a year later, and was posted to a battalion of the Gloucestershire Regiment. Early in the following year, however, he was detached for service with a Trench Mortar Battery, of which from time to time he was in acting command, and it was for his distinguished service in this capacity that he was awarded the Military Cross. Shortly afterwards, on Aug. 8th, 1916, when in the trenches, he received a bullet wound in the thigh from a sniper, and was at home until the following December. He then returned to his battery, and served with it until Aug. 22nd, 1917, when he was severely wounded in the knee by the premature explosion of a bomb. This kept him in England for the rest of the year, but early this year he transferred to the Royal Flying Corps. Passing out at the head of the list in his flying school examination at Easter, he was sent out to the front at the beginning of May as an observer. On Aug. 8th he went out in the morning on patrol over the lines, and he and his pilot were both found dead later.

Engagements.

OXSPRING—WARDLOW.—The marriage between Capt. B. Oxspring, M.C., K.O.Y.L.I. and R.A.F., son of Mr. and Mrs. Joseph E. Oxspring, Wardsend House, Sheffield, and Miss Gladys Wardlow, elder daughter of Mr. and Mrs. Marmaduke Wardlow, of West Royd, Sheffield, will take place at the U.M.F. Church, Surrey Street, Sheffield, on Wednesday, Sept. 11th, at 2. No invitations are being issued, but all friends will be welcome at the church.

TAGGART—ESSEX.—The engagement is announced of Lt. Gordon Taggart, R.A.F., late Transvaal Horse Artillery, third son of the late John Taggart and of Mrs. Taggart, Queenstown, South Africa, to Erica, eldest daughter of Mr. and Mrs. Essex, Bilton, Rugby.

Marriages.

DEAKIN—BERESFORD.—On Sept. 3rd, at St. Marylebone Church, Maj. Norman Deakin, Yeo., attd. R.A.F., was married to Edith Kathleen de la Poer, only daughter of Col. C. F. C. Beresford, late R.E., of Kilmore House, Camberley, by the Rev. G. B. Dransfield.

DONOVAN—COPP.—On Sept. 3rd, at Bath, Lt. Richard J Donovan, West India Regt., attd. R.A.F., only son of E. W. Donovan, of Prestwich, Lancashire, was married to Edith Madaline, eldest daughter of James Copp, of Apperley, Gloucester.

JENKINS—GREGORY.—On Aug. 28th, at St. Peter's, Bexhill-on-Sea, Lt. Douglas Lillington Jenkins, Indian Army R. of O. and R.A.F., youngest son of the late Oswald Jenkins and Mrs. Jenkins, of Little Aston, Sutton Coldfield, was married to Leila Maude, younger daughter of the Rev. and Mrs. A. Rothwell Gregory, late of Ulgham Vicarage, Morpeth, and niece of Sir Philip Watts, K.C.B., by the Rev. Claude Jenkins, M.A., brother of bridegroom, chaplain to the Archbishop of Canterbury, assisted by the Rev. H. R. Bentley, M.A.

NEWTON—FOLKARD.—On Sept. 4th, at the Parish Church, Farnham, Capt. T. M. B. Newton, Royal Berks Regt. and R.A.F., son of the late T. E. Newton and Mrs. Newton, Winchester, was married to Edith Marjorie, elder daughter of Mr. and Mrs. H. C. Folkard, Farnham.

* * *

Captain H. W. E. Barwell, M.C. R.F.C. (Obsr.) and Capt. R. F. Fenn, R.F.C. (Pilot), were both reported missing together on March 25th, 1918. Will anyone writing prisoners in Germany kindly inquire for them. The information will be gratefully received by William Barwell, 26, George Road, Edgbaston, Birmingham.

* * *

Capt. and Flt. Comdr. Sydney Phillip Smith, R.A.F. (late R.F.C.) has been missing since April 6th. Will anyone writing to hospitals and camps in Germany kindly inquire for news of him? The information will be gratefully received by Mr. and Mrs. Arthur Smith, Morning Side, Aldershot.

AIR FORCE.

Deaths.

COPE.—Capt. W. Gordon Cope, R.A.F., who was killed in an aeroplane accident in Hants on September 3rd, was the husband of Doris Cope (*née* Shephard), 30, West Heath Drive, Hampstead, and only son of Mr. and Mrs. Walter C. Cope, "Carson" House, Finchley.

DENTON.—Flt. Cadet Joseph Edward Denton, R.A.F., of Pudsey, Leeds, was killed on Sept. 3rd in the neighbourhood of an aerodrome in Yorkshire. His machine was in collision and caught fire.

FATTORINI.—Lt. Thomas Fattorini, R.A.F., who was killed in action on Aug. 13th, was the son of Thomas Fattorini, of Rockwood, Skipton, Yorks. He was 19 years of age.

LYNE.—Lt. Edgar Lyne, jun., R.A.F., who was killed in action on Aug. 26th, was the elder son of Mr. Edgar Lyne, of 20, Christchurch Road, Streatham, S.W., and husband of Gladys Mary Muir Lyne (née Bond), of 14, Queen Anne's Gardens, Bedford Park, W.

OERTLING.—Lt. Lewis John Francis Oertling, R.A.F., who died of wounds received in action on Aug. 8th, in a regimental aid post, was the husband of Ursula Oertling, 13, Gatwick Road, Wimbledon Park, S.W., and only son of Mr. Henry Oertling, of The Hermitage, Barnes, S.W. He was 27 years of age.

SMITH and WHITEHEAD.—At a Weymouth inquest on Sept. 5th on the body of Lt. Fred Forster Smith, R.A.F., a seaplane pilot, it was stated that his body was picked up by a destroyer in the Channel lashed to a float.

Other wreckage was seen two miles away, and Mr. Smith, who was still alive when rescued, died before reaching port. He had a gash in his chin, and was wearing shirt and breeches only, with a punctured lifebelt.

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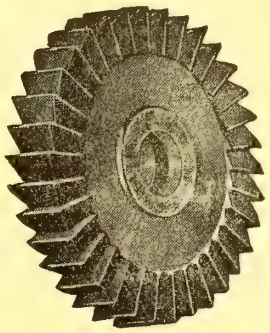
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He left his base with Lt.-Obsr. Joseph Whitehead, R.A.F., who is still missing, and the seaplane made signals an hour afterwards. Nothing was seen of an accident, and there was no evidence to show how the machine was wrecked.

A verdict of "Death by Drowning" was returned.

SMYTH.—Lt. Gerald Hugh, who was accidentally killed whilst flying on September 5th, was the son of Mr. and Mrs. Smyth, Cambridge. He was 20 years of age.

TAYLOR.—Capt. A. Dudley Taylor, R.A.F., who was killed on active service on Aug. 24th, was the eldest son of Mr. and Mrs. T. T. Taylor, of Crowstone, Blake Hall Road, Wanstead, Essex. He was 25 years of age.

TEDBURY.—Sec. Lt. Ralph Newman Tedbury, R.A.F., who died of wounds received in action on September 4th, was the only son of Percy Tedbury, East Finchley.

Engagements.

COX-PHELPS.—An engagement is announced between Lt. J. P. Cox, R.A.F., second son of Mr. and Mrs. J. J. Cox, Manchester, and Violet, only daughter of Mrs. I. Phelps, Carsack, Sheffield.

MATTHEWS—DIETRICHSEN.—The marriage arranged between Lt. Stuart L. Matthews, R.A.F., son of Lt.-Col. W. H. Matthews, D.S.O., of Wimbledon, and Marcia Neva, daughter of James Dietrichsen, The Pollards, Loughton, Essex, will take place at St. Mary's Church, Loughton, on Saturday, Sept. 14th, at 2.30. No invitations will be sent, but all friends will be welcome at the church, and afterwards at The Pollards. Train leaves Liverpool Street 1.35.

TAYLOR—ALLEN.—The engagement is announced between Lt. P. S. Taylor, R.A.F., second son of the late Mr. George Taylor and Mrs. Taylor, of Lyndon Road, Olton, Warwickshire, and Marjorie, second daughter of Mr. and Mrs. J. H. Allen, of Yardley Road, Acocks Green, Birmingham.



Marriages.

CHAPPELL—SYMES HARRIS.—On Sept. 5th, at St. Martin's, Dorking, Sec. Lt. F. Douglas Chappell, R.A.F., was married to Vera Agnes, daughter of the late W. Symes Harris and Mrs. Harris, of Redcote, Dorking, by the Rev. Canon Chichester.

DASHWOOD—FOSBERY.—On Aug. 31st, at Clifton Parish Church, Lt. Alexander Charles Hutchinson Dashwood, R.A.F., only son of C. E. Dashwood, M.R.C.S., L.R.C.P., and Mrs. Dashwood, of Villa San Pancrazia, Taormina, Sicily, was married to Evelyn Grace Vincent, daughter of Mr. and Mrs. P. Fosbery, of Lapford, North Devon, and grand-daughter of the late H. T. Chamberlain, of Clifton, Bristol, and the late Col. G. V. Fosbery, V.C., by the Rev. R. A. Bosanquet.

ELIAS—CHIDELL.—On the Sept. 6th, at St John's Church, Woking, Capt. Ivor Glyn Elias, R.A.F., eldest son of Mr. and Mrs. Davy Elias, Caerphilly, was married to Marjorie Winifred Chidell, elder daughter of Mr. Charles A. Chidell, of Hook Hill, Woking, by the Rev. E. E. Skuse.

STORMONT—HAZELL.—On Tuesday, Sept. 3rd, at St. Columba's, Pont Street, S.W., Capt. W. Stormont, R.A.F., elder son of Mr. and Mrs. L. Stormont, of 60, St. George's Road, S.W., was married to Betty, youngest daughter of the late Wm. Hazell and Mrs. Hazell, Broughty Ferry, Scotland, by the Rev. Archibald Fleming, D.D.

WILMOT—McCULLY.—On Aug. 30th, at Montreal, Canada, Lt. John H. A. Wilmot, R.A.F., son of T. G. H. Wilmot, of Barnes, S.W., was married to Bertha, daughter of Mrs. McCully, of Montreal.

Birth.

BROMET.—On Sept. 3rd, at 10, Norfolk Road, St. John's Wood, N.W., the wife of Lt.-Col. G. R. Bromet, D.S.O., R.A.F., of a daughter.

* * *

The parents of Capt. J. W. Matthews, R.A.F., who was reported missing on July 31st, wish to communicate with those whose sons were missing about that date.—Brockley Combe, Weybridge, Surrey.

FOREIGN COMMUNIQUES.

FRANCE.

Sept. 3rd.—During the day of Sept. 2nd, favoured by the fine weather, our Air Service displayed particular activity on the whole front and carried out important work. Our observers made numerous reconnoitring expeditions over the enemy's lines and took some hundreds of photographs. In the battle zone our infantry acroplanes marked the advance of our troops, located the enemy's forces and batteries in action, and, in conjunction with the artillery, co-operated in the destruction of the enemy's centres of resistance.

Very many fights took place, in the course of which 19 enemy aeroplanes were shot down or put out of action, and nine captive balloons set on fire in particularly perilous conditions.

Our bombing aeroplanes, in the course of expeditions carried out during the day, dropped over 13 tons of bombs on the regions of Chavignon, Anizy, and Brancourt.

During the night, in spite of the cloudy weather, our bombers continued their work. Sixteen tons of projectiles were dropped on the railway stations, bivouacs, and railways in the enemy's back areas. The railway station at Flavy-le-Martel alone received six tons. Two violent fires broke out as the result of this bombardment. Three tons dropped on the cantonments of the region of Jussy and four tons on the railway stations of Guignicourt and Maison Bleue gave excellent results. In addition, our bombers used several thousand rounds on the enemy's bivouacs.

Army of the Orient.—Allied aviators bombed the railway stations and encampments in the region Hudovo-Ghevgueli and depots in the Struma valley. Two enemy machines were driven down in air fighting, one near Hudovo by French aviators, the other near Seres by British aviators.

Sept. 4th.—Army of the Orient.—British aviators bombarded the station of Miletkovo and were engaged in several aerial combats. One enemy machine was brought down and four others were driven down out of control.

Sept. 5th.—Army of the Orient.—British aviators bombarded camps in the Vardar valley and shot down an enemy biplane.

Sept. 5th.—During the 4th our aviators did some important work. Our low-flying machines machines-gunned the troops which were retreating to the east of Canal du Nord, especially in the region of Flavy Le Martel Sussy, Bois L'Abbe Caillouel et Menessy. The troops retreating to the north of the Vesle were heavily fired on, also the troops camped on the north bank of the Aisne. During the same day our bombing machines carried out several raids, and threw six tons of bombs on railways, etc. Our machines took part in several fights over the enemy lines. Fifteen enemy machines were either brought down or driven out of control. A number of excellent photographs were also taken. In the evening the weather was unfavourable for flying.

Sept. 6th.—Army of the Orient.—French and British aviators bombed the enemy organisations in the Vardar Valley.

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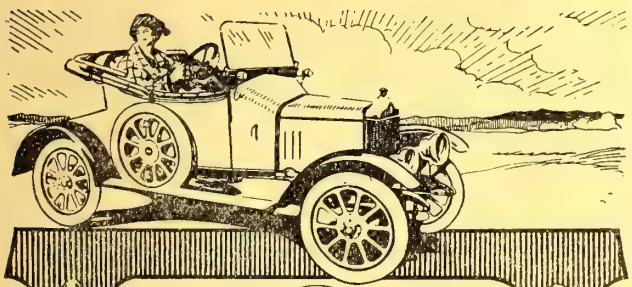
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Sept. 7th.—Army of the Orient.—French and British aviators bombed enemy encampments in the regions of Monastir and Struma.

ITALY.

Sept. 3rd.—In the afternoon of Sept. 1st an enemy aeroplane was brought down and another forced to land

Sept. 7th.—On the 5th and 6th Italian naval machines and British aeroplanes carried out several bombardments, inflicting losses and damage on the enemy.

Sept. 8th.—Our flights dropped two tons of bombs on the sheds and machines of the hostile aviation camp near Belluno. Other reconnoitring flights ran through up and down the Gail and Drava Valleys, and flying very low dropped bombs with great accuracy on the Villach and Lienz railway stations.

GERMANY.

Sept. 3rd.—Yesterday we shot down 13 enemy balloons and 55 aeroplanes, 36 upon the Arras battlefield, and of these 26 were brought down by Chaser Squadron No. 3, under the leadership of First Lt. Loerzer. First Lt. Loerzer thereby achieved his 35th aerial victory.

Sept. 4th.—Yesterday we shot down 32 enemy aeroplanes.

Sept. 5th.—Yesterday we shot down 22 enemy aeroplanes and seven active balloons. Lt. Rumey achieved his 30th aerial victory.

Sept. 9th.—Five aeroplanes were brought down out of an English squadron which advanced to the attack. In August on the German fronts 565 enemy aeroplanes were brought down, 62 of them by our anti-aircraft guns, and 52 captive balloons. Of these 251 aeroplanes are in our possession. The rest were observed to fall on the other side of the enemy lines. We lost in battle 143 aeroplanes and 86 captive balloons

AUSTRIA.

Sept. 8th.—On the Italian front there has very lively aerial activity, otherwise there is nothing of importance to report.

U.S.A.

Sept. 4th.—Yesterday our aviators bombed railroad yards at Longuyon, Dommary, Baroncourt and Conflans.

BELGIUM.

Sept. 4th.—Sous Lt. Coopens on Sept. 3rd and Sept. 4th set fire to two enemy balloons, thus achieving his 29th and 30th victories.

Sept. 6th.—Our artillery brought down an enemy aeroplane.

"BIRDS OF A FEATHER."

Pilots in two aeroplanes performed the latest aerial tricks over the Houses of Parliament and round the Victoria Tower the other day, chasing each other, playing "touch," and at times descending so low as almost to touch the building.

[In view of the average level of intellect in the House of Commons, one quite understands the attraction which it holds for the type of imbecile-aviator—or "fool-flyer," as the Americans call him—who delights in stunting over closely built areas. Evidently, the low level of their flying was not quite so low as their mental level.—Ed.]

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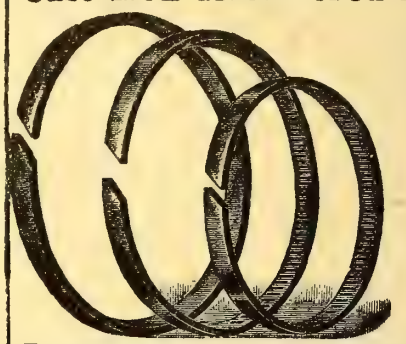
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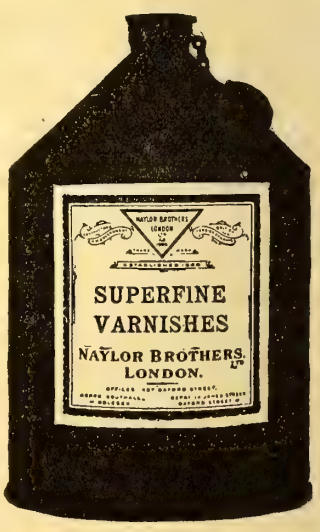
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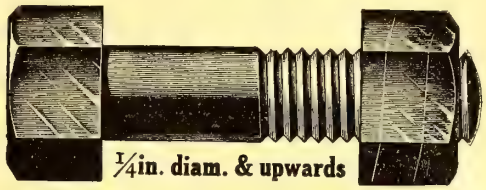
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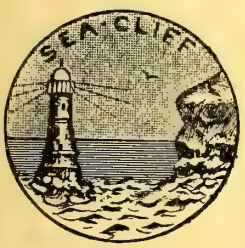
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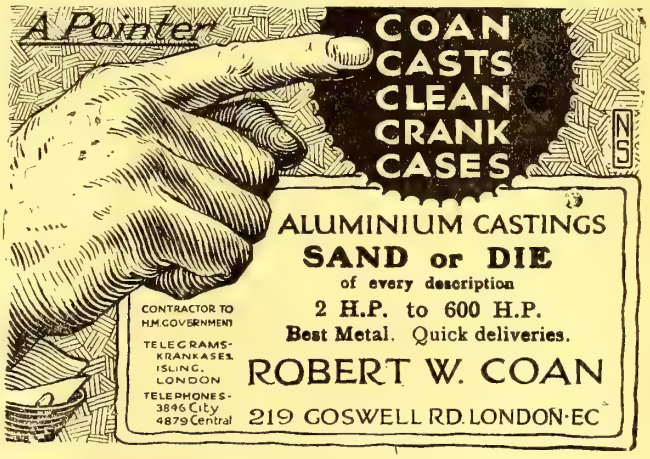
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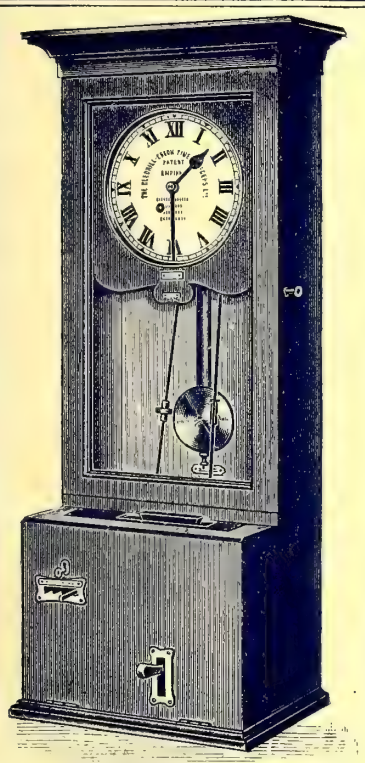


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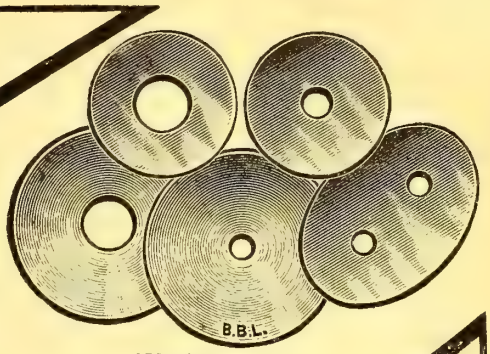
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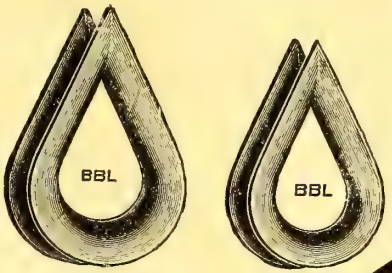
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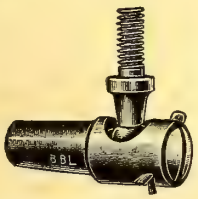
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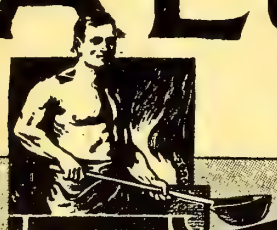
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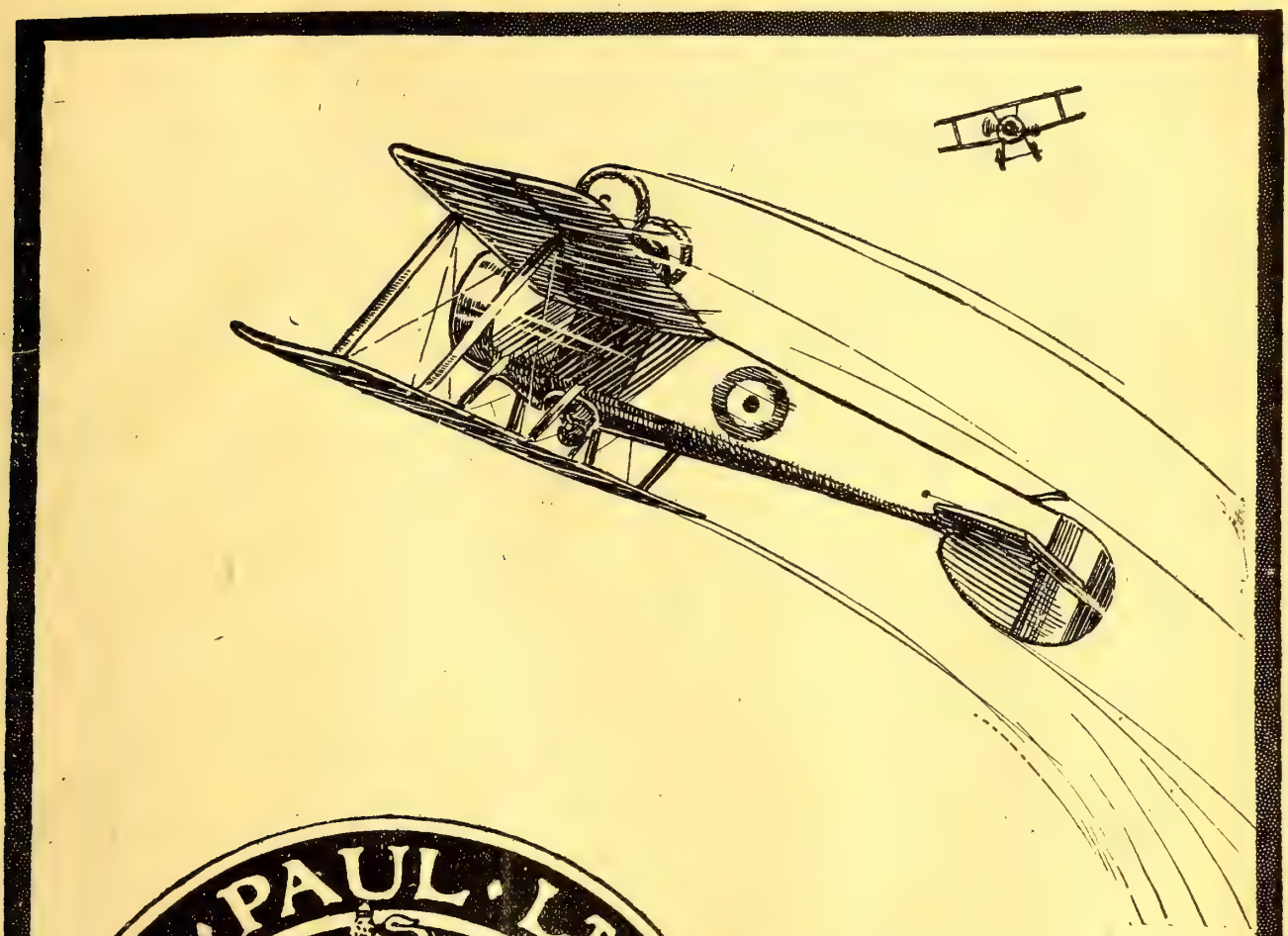
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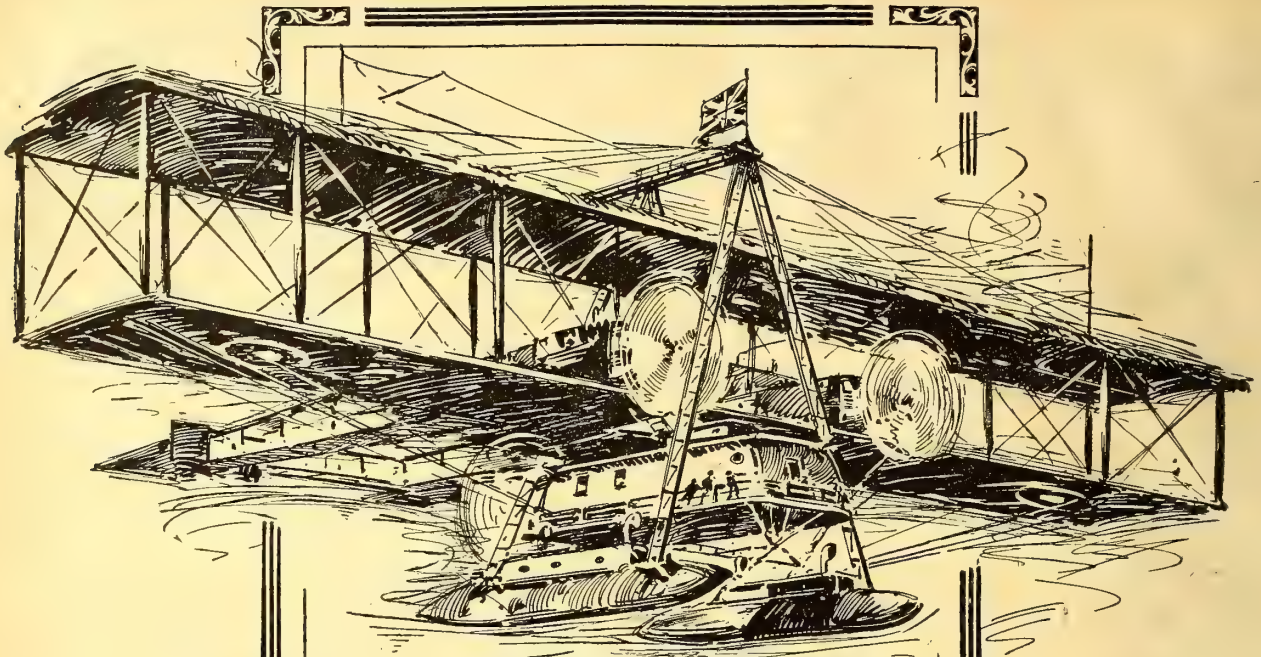
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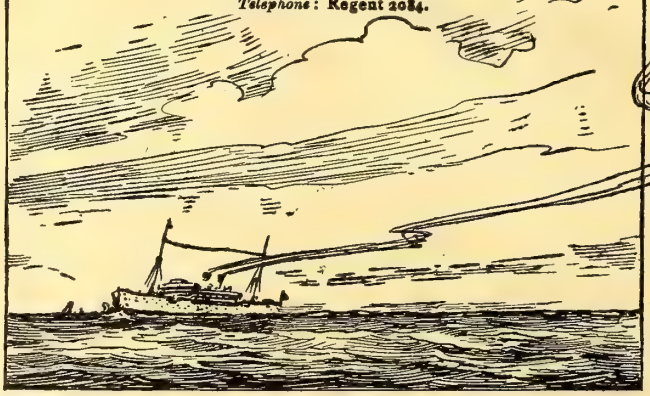
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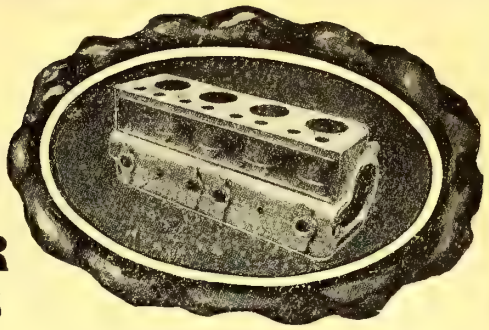
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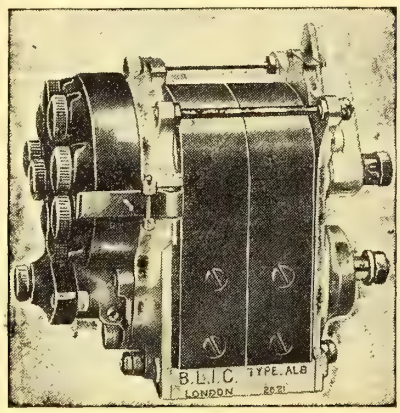
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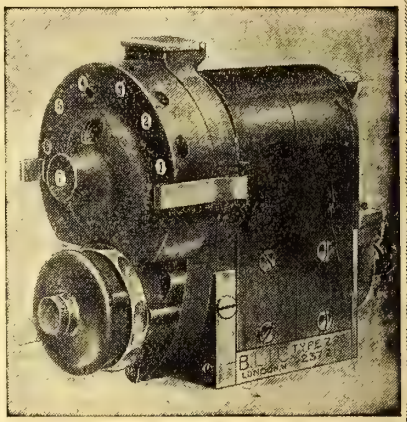
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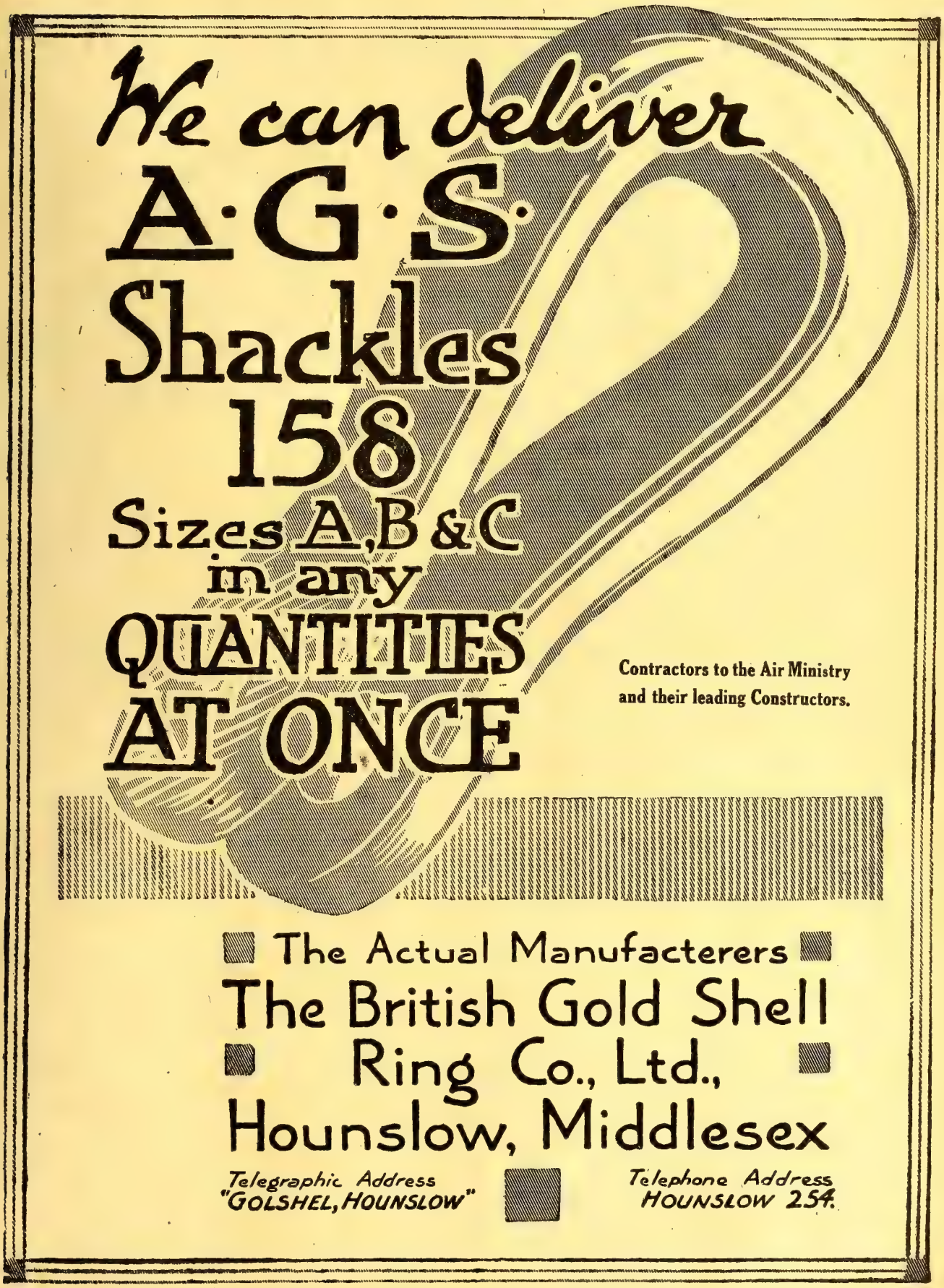
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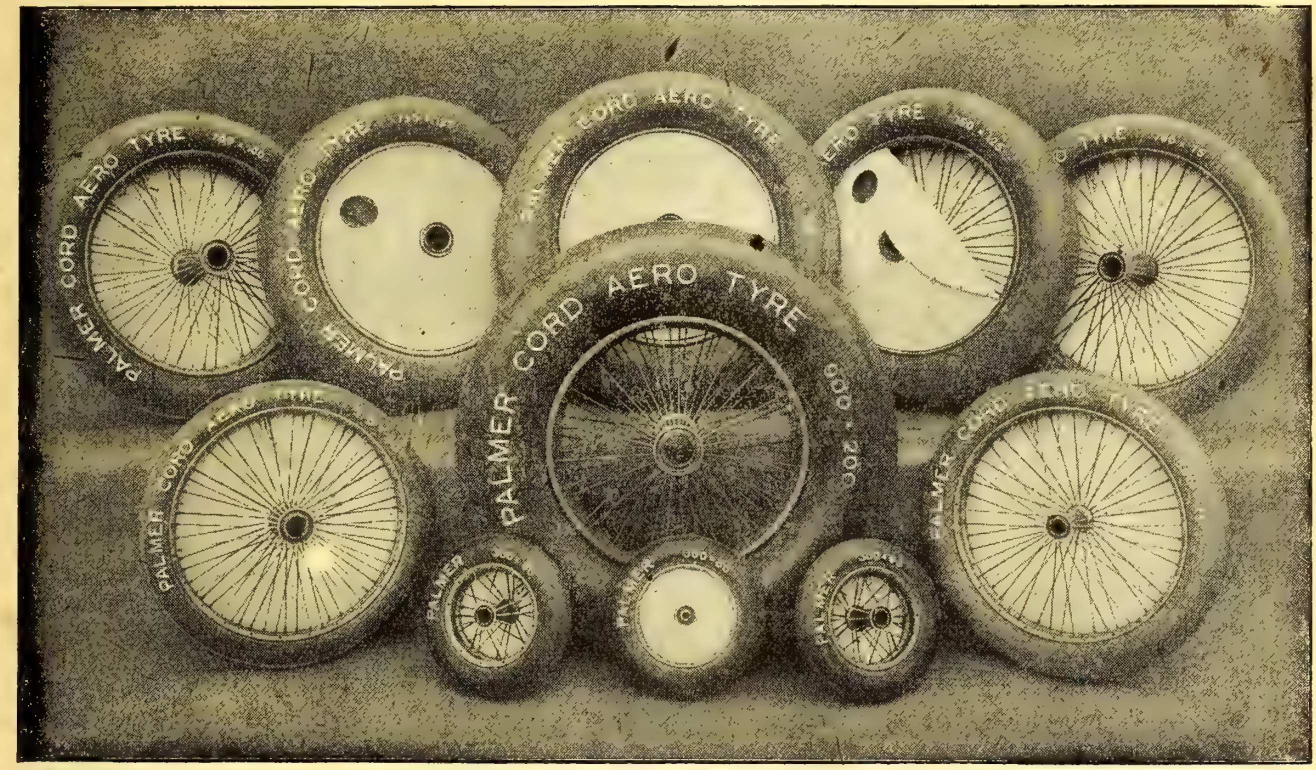
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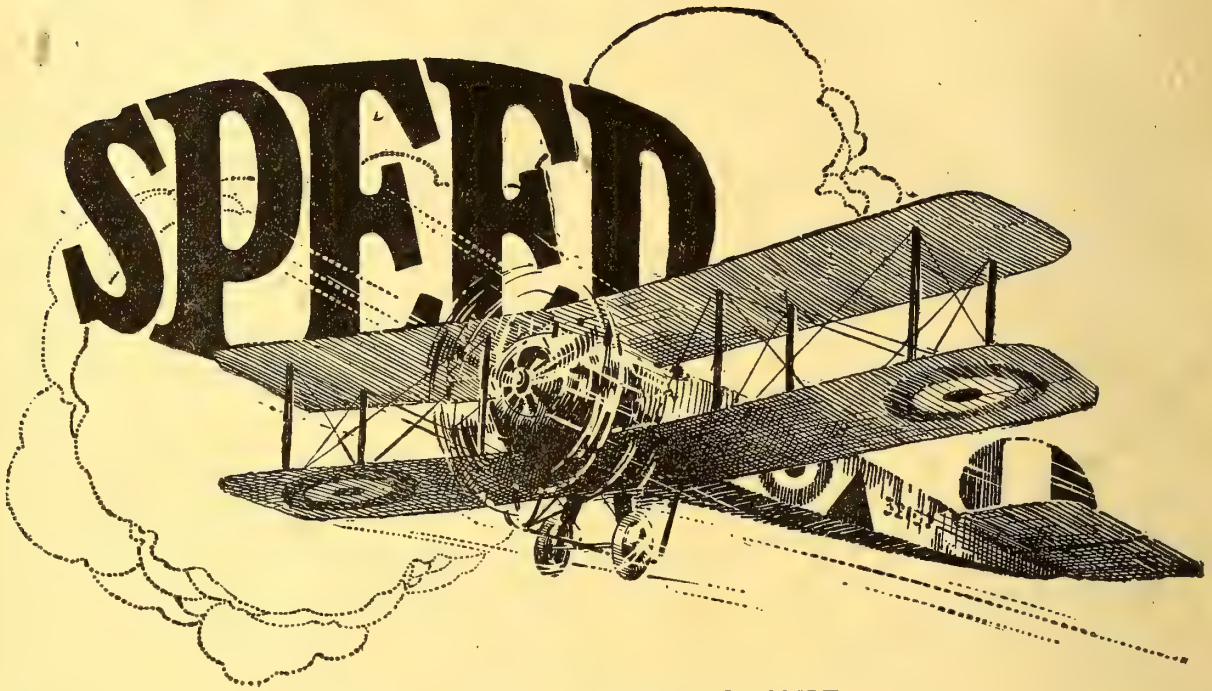
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166, Piccadilly, London. W.1

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AVRO

The AEROPLANE

The Editorial and Advertising Offices of "The Aeroplane" are at 166, Piccadilly, London W.1.
Telegraphic Address: "Aileron, London." Telephone: Mayfair, 5407.
Accounts, and all correspondence relating thereto, should be sent to the Registered Offices of The Aeroplane and General Publishing Co., Ltd., Rolls House, Breams Buildings, E.C.4.
Subscription Rates, post free: Home, 3 months, 7s. 6d.; 6 months, 15s.; 12 months, 30s.
Foreign, 3 months, 8s. 9d.; 6 months, 17s. 6d.; 12 months, 35s. Canada, 1 Year, $8.
U.S.A., 1 Year, $8.50c.

ON CLEARING UP THE BOLO.

There is no truth in the rumour that the roof of the Hotel Cecil and its numerous annexes are being overlaid with six feet of ferro-concrete, nor is it true that chain-cable moorings for staff cars and motor-cycles are being fixed in the court-yard. Such architectural operations might be necessary if the vertical gusts throughout the building were of the typhoonic character which is attributed to them by those who delight in pulling the legs of minor officials. Nevertheless there is undoubtedly a certain uneasiness in many of the offices of the Air Ministry touching the operations of the new Air Enquiry Committee under Mr. Cosmo Bonsor, which Lord Weir has appointed to investigate "the establishments of the Air Ministry in order to establish how far the staff is adequate or otherwise for the work to be done, and with special reference to the possible release of officers of high medical category for service in the field."

This country owes an undischargeable debt of gratitude to Lord Weir for his achievements since he took office under Lord Cowdray at the beginning of 1917. The output of aircraft was then a jesting and a by-word. The policy on which machines and engines were ordered was imbecile. The net result was that the R.F.C. in the Field were very much the under-dogs, and that the R.N.A.S., barring its shore-going squadrons, was a mere futility so far as anti-submarine operations were concerned.

In a few months Lord Weir had increased the output out of all recognition, and in a year he had instituted a new policy by which the best brains of the Aircraft Industry were entrusted with the design of new type war machines and engines instead of booming them off while favoured officials laboriously endeavoured to make good with inferior designs.

We see the result to-day in the fact that even our second-rate machines in the field are better than the average of the enemy's best types, while our very best are far ahead of the Hun's picked examples.

A Task and Its Achievement.

How Lord Weir achieved his results is known only to himself and to perhaps a few of those men whom he chose to carry out his plans. But it was commonly believed among those at the Hotel Cecil who were trying to win the war that, after studying the state of affairs for a few weeks, Sir William Weir—as he then was—came to the conclusion that the only way to make the place efficient was to scrap everything and start afresh. Such drastic action would have held up all output for months, and machines were urgently wanted at the very moment. So he decided to push the whole seething mass of inefficiency in front of him till the output of aircraft was sufficiently large to enable him to start on the job of reorganising the personnel of the place.

In this labour of Hercules he has succeeded beyond expectations, and one assumes from the recent announcement concerning Mr. Bonsor's Committee that Lord Weir has decided that the time has at last come when he can, without decreasing output, set to work to clear up the Hotel Bolo—as the Hotel Cecil is commonly called. The appointment of the Committee is opportune in every way. In the first place it tends to show that the output of aircraft to-day is sufficient for our present needs. And in the second it promises well for the future, when the inefficients have been cleared out and a better system has been set up in which the good men are given a free hand, unhampered by fools and unobstructed by knaves.

Species of Graft.

Despite all that one hears about graft at the Bolo and its annexes, one believes that the great majority of the officials are honest, at any rate so far as mere financial crookedness is concerned. A contractor cannot walk in and obtain favours for cash across the counter as was and is and always will be the custom among the Russians and other yellow races. But there has been a certain amount of that much more subtle kind of graft which consists in doing a commercial pal a good turn because the commercial pal has entertained so lavishly or has been so kind about lending cars and so forth, or because his lady friends are so charming.

There is perhaps still more of that peculiar graft which consists in a cute but not really clever minor official getting hold of a lot of information in relation to his own job and hanging onto it, with the idea of making a corner in it and using it as a lever for promotion. Or he may get hold of designs from outside and develop them on his own account, afterwards freezing out the original trade designer. Or he may take designs away from their owner and hand them over to a rival firm, which may be influential though not efficient, with the ultimate object of securing a good job for himself when the war ends or when he is kicked out of the Air Force.

The foregoing species of graft concern the *materiel* side only—that is to say, such departments as deal with contracts, supply, design, research, equipment, and so forth. If Mr. Bonsor is going to comb out those departments, he will find it rather a difficult job, for these technical and commercial people in uniforms hang together like limpets, obviously for fear of hanging separately. However, he is fairly safe if he works on the assumption that at least 80 per cent. of the people in the Air Ministry who pose as being technical or business men are only in the Air Ministry because they could not get a job with any firm in the Aircraft Industry.

There are exceptions, of course, but it would not be difficult to count them, and some of the really first-class people could give the names of the exceptions almost

off-hand. Also, of course, it is possible, as proof of the high quality of the staff, to point to a number of people who have left the Bolo or the R.A.F. and have secured quite good jobs in the Aircraft Industry.

The latter are, as a rule, where they are merely because they are supposed to know the ropes on the inside of the Bolo, and how things are worked. They are there because of what they were and not because of any ability which they might once have possessed.

Their position is precisely analogous to that of a number of ex-officers of the Royal Navy who, never having possessed any outstanding ability, and never having risen to exalted rank, but merely being known as hail-fellows-well-met, with the accompanying absorbent properties, are given well-paid jobs by shipbuilding firms because they know how to work things with the Naval authorities. There is nothing dishonest about the arrangement. It merely makes things easier between the firms and the Government departments concerned. But it is pretty certain that it does not make for first-class efficiency on either side.

The Need for an Adviser.

Combing out on the technical and supply side ought to be a fairly easy matter, if only Mr. Bonsor and his Committee have the good fortune to fix on a first-class technical adviser at the start. But if they take the wrong advice they may do serious harm by combing out able men of comparatively low rank and leaving the real incompetents higher up.

Such a comb-out would look very well as eye-wash when stated in figures in the House of Commons, but the effect on output would be dire. If certain minor officials have done things which they ought not to have done, and have left undone the things which they ought to have done, it is none the less a fact that it is the honest hard work and loyalty of minor officials which has produced our present enormous output.

Administrative Combing.

When it comes to combing out the administrative, or what one might call the military, as differentiated from the *matériel*, side of the Hotel Bolo the Committee's task is at once easier and more difficult. It is easier because the Committee cannot be bluffed by claims to technical knowledge on the part of pseudo-scientists with strings of letters after their names, or testimonials from works managers who, if the truth were known, thought it cheap to get rid of them at the price of a testimonial. On the military side an officer holds his job on his service record, more or less.

But the difficulty is that in combing out able-bodied men the wrong men may easily be combed out. A man has to have a fairly sound constitution to stick out against the long hours and worry of office work. And probably it is precisely the most valuable men who will try to get themselves combed out, in order to get clear of the unwholesome atmosphere of the Bolo.

The Fallacy of Decrepitude.

In theory it is all very well to say that the office jobs ought to be held by war-worn or crashed aviators. But the mere fact that a man has been crashed is no guarantee that he has ever had brains—it may indicate precisely the opposite—and a man with war-worn nerves is the last person who is likely to be useful in an office.

Heaven knows the office-work at the Bolo has been in a sufficiently maze-like tangle ever since the R.A.F. came into existence, as witness the famous occasion when all the administrative officers were allotted technical pay and all the technical officers had theirs stopped. Also, consider the way in which promotions have been bungled, good men of immense seniority being passed over for majorities which were long overdue, while people who have been in the Force about five minutes have gone up over their heads. Such things could only happen through pure inefficiency in office-work, owing to records being badly kept, and papers being lost or mixed up with those of other people.

It would be no job for a war-shattered wreck to pull out all these tangles, and, though the number of a man's arms and legs is no gauge of his brain power, it is fairly true that an able-bodied man can do a heavier day's work in an office than can a nerve case just out of hospital. It is a disastrous fallacy to assume that the office jobs should be done by decrepit aviators.

There are, it is true, several officers who are deficient in body, but endowed with an abundance of brains, doing splendid work at the Bolo, in spite of the mass of inefficiency surrounding them, and there are a number of able-bodied officers—rapidly becoming neurasthenic through worry—who are also helping to push the mass along. The people who ought to be pushed out are the able-bodied men who have never even been to see the war, and the crocks—physical, mental, and nervous—who have seen too much of the war.

The Inverse Ratio of Efficiency.

The trouble is that some of the able-bodied people—especially in the financial and contracts and legal and such directions—are so important that they are not likely to be touched. You see, the bigger a department is the more important is its chief. Also the more chaotic and inefficient a department is the bigger it must be to get through its work in a sort of a way. Therefore the greater the inefficiency of a department the more important is its chief, and, as a corollary, the more inefficient the chief the less likely he is to be combed out by Mr. Bonsor's Committee.

Thus a very efficient department, with an assistant and a typist or two, might be run by a staff-captain. If he made it so inefficient as to need four or five assistants, all captains, and about 20 or 30 typists, all doing useless work and loading up unfortunate squadron and wing commanders with bales of forms and returns and so forth, he would certainly be a major, and if he could only invent a whole, new, useless branch of the Bolo, with about a thousand clerks and typists, and sundry lieutenant-colonels and majors as assistants, he would automatically become Controller or Comptroller or Director or Master-General of something or another and be promoted to Brigadier-General or even to Major-General—that is, unless Lord Weir caught him at it, in which case he might be appointed to be G.O.C. R.A.F. operating with B.E.F. Turkestan or Karelia or Inspector of Aerodromes on Lake Tanganyika, or something of that sort, and so be removed from the chance of doing mischief, but unfortunately he might still retain the rank into which he had "hot-stuffed" himself—to use the expressive old Brooklands slang phrase.

The Real Inefficients.

If Mr. Cosmo Bonsor's Committee will devote its attention to the work done by each different department—of which so much is not merely useless but definitely harmful—and will then trace back to the originator of all that useless work, it will be in a much better position to remove obstructions to efficiency than if it merely takes the report of a medical board and combs out all the Grade I officers and officials.

Also it would do quite well if it removed bodily at least half the women and girl typists and clerks, and paid what were left double wages for working longer hours. A great deal of the useless work loaded upon squadrons, and upon the Aircraft Industry also, is

caused by frivolous, careless, brainless, and uninterested female clerks, who are merely in the Bolo to make a bit of pin-money and scramble through their work all-anyhow so as to have their noses powdered and their hair puffed out in time to bolt as soon as the clock strikes.

The Chairman of Committee.

Just why Mr. Cosmo Bonsor was appointed to this job is not evident, but his record is such as to give one confidence in his ability. He was a director of the South-Eastern Railway in the days when it was commonly reported that passengers were requested not to get out and pluck the flowers along the line while the train was in motion. Apparently he failed to speed up the South-Eastern, but that railway ultimately amalgamated with the London, Chatham, and Dover, to their mutual advantage, and one assumes that Mr. Bonsor shared the responsibility and the credit of the amalgamation.

He is not publicly known as having been interested in aviation, but that is no drawback to his ability to comb out the Bolo. And, anyhow, one remembers that when M. Blériot flew the Channel in June, 1909, Mr. Bonsor's son came down to Dover and placed the whole railway system at the disposal of M. Blériot in order to get his damaged machine up to London, so evidently Mr. Cosmo Bonsor realised then—unlike most railway and other financial magnates—that aviation was of some importance. One has very pleasant recollections of the courtesy and kindness, and of the tireless energy, of Mr Bonsor junior during that cold and damp June night in that draughty station at Dover, when we were trying to persuade M. Blériot's Type XI monoplane to go into a railway truck several sizes too small for it.

A Happy Augury.

Mr. Bonsor's name is one which sticks in the memory because of its unusualness. An irrepressible jester holds that it is a happy augury for the success of the Committee. He holds that it is an Anglicisation of *"Cosmos! Bon Soir!!"* which *might* be translated—very freely—as "Good-night! Everybody and Everything!"—which being interpreted, after the manner of omens and auguries and parables and suchlike, would mean that Mr. Bonsor is going to put the extinguisher on everybody and everything inefficient at the Bolo. May it be so.

Anyhow, everybody who has at heart the welfare of the R.N.A.F. and the R.A.F. and the I.A.F. (to use the initials by which the three Services *ought* to be called, despite official obtuseness or obstinacy) will wish well to Mr. Bonsor's Committee.

And many a long-suffering squadron-commander, wing-commander, stores officer, adjutant, aircraft constructor, designer, and works manager will bless the name of Lord Weir for having appointed a Committee which has, at any rate, a sporting chance of combing out from the Hotel Bolo, Soviet Chambers, Bolshevik Mansions, Trotsky Rents, and Hindenburg House some of the inefficients who delay progress and prevent others from being efficient.—C. G. G.

THE WORK OF THE I.A.F.

During the month of August the Royal Air Force, Independent Force, made successful raids upon no fewer than 21 important towns in Germany, in addition to a large number of raids upon such German aircraft stations as Bühl, Boulay, Freisdorf, Morhange, etc., and other military objectives. The total weight of bombs dropped in these raids is well over 100 tons, as compared with 48 tons in May, 66 tons in June, and 81 tons in July last.

The following is a list of the large industrial centres attacked (exclusive of aerodromes, etc.), showing the precise military objective upon which the bombs were discharged and the number of times each place has been raided.

Towns.	Objectives.	No. of Times Raided.
Bettembourg	Railway station	Once
Burbach	Factories	Once
Coblentz	Railways	Once
Cologne	Railways and factories	Once.
Darmstadt	Railways	Once
Dillingen	Factories	Once.
Duren	Factories	Once
Ehrange	Railway junction	Once
Frankfort	Factories and railways	Three times.
Karlsruhe	Station	Once.
Luxembourg	Railway station	Once
Marnheim	Chemical factories	Three times.
Metz-Sablon	Railways	Three times.
Offenburg	Station & railways	Once.
Remilly	Railway junction	Once
Rombach	Factories	Once.
Saaralbe	Chemical factory	Once
Saarbourg	Railways	Three times.
Thionville	Railway workshops	Three times.
Treves	Railways and workshops	Three times.
Volkingen	Blast furnaces	Once.

The R.A.F. Independent Force has made 249 aerial raids over German territory during the last three months, dropping 247 tons of bombs upon definite military objectives. The German territory thus brought into the war zone by British aviators represents a belt of the Rhine valley roughly 250 miles long, from Cologne to Baden.

During the period June-August, 1918, the railway triangle at Metz-Sablon and the junction at Thionville have been raided 46 times. Much damage was done in these raids, as shown in photographs taken by British aviators.

An effect of the raids has been the withdrawal by the Germans of a number of squadrons from the front for the defence of the Rhine. The home aerodromes of the Germans have been repeatedly raided during the period from June to August, 1918. Boulay aerodrome has been bombed 32 times, Morhange 14 times, Bühl 13 times, Freisdorf 8 times, Hagenau 5 times, etc.

THE U.S. AIR SERVICE.

The U.S. War Department announces that "Air Service" will now be the general term for the Air Force, including the Division of Military Aeronautics and the Bureau of Aircraft Production.

The personnel of the Division of Military Aeronautics and those serving in the Bureau of Aircraft Production will be known as members of the Air Service, Military Aeronautics, and Air Service, Aircraft Production, respectively.

The Chief of the Bureau of Aircraft Production will hereafter be addressed as the Director of Aircraft Production, and the Chief of the Division of Military Aeronautics, as the Director of Military Aeronautics.

THE ROYAL CANADIAN AIR SERVICE.

At Ottawa, on Aug. 8th, the Hon. A. K. Maclean, Acting Minister of the Department of the Naval Service, announced the formation of the Royal Canadian Air Service. This organisation will come under the direction of the Naval Department, and has for its primary object the defence of Canada's coasts, but men enlisting in the Air Service will be liable for service outside the Dominion if necessary.

Candidates accepted for the Royal Canadian Air Service will be entered as cadets, and will be required to sign on for three years, or for six months after the duration of the war.

It was stated at the Department that pilots for seaplanes, aeroplanes and kite balloons were required immediately in connection with the organisation. Only young men, British-born, or naturalised British subjects, between the ages of 17½ and 26 years, and in the highest medical category, will be accepted, and arrangements have been concluded with the Militia Authorities, under which accepted candidates will be released for service in the Royal Canadian Air Service.

Seaplane cadets, it is stated, will be trained in the United States this winter, and airship cadets will be sent to England for training.

Much of the above information is taken from "Aerial Age," New York, to whom thanks are due.—R. M.

CANADA AND THE AIR SERVICE.

Ottawa, Aug. 3rd.—An Order-in-Council has been passed providing that no discharge from the Canadian Expeditionary Force granted to any man for the purpose of permitting him to enlist in the air forces shall relieve such man from military service under the provisions of the Military Service Act except during such period as he may serve with the Royal Flying Corps or the Royal Air Force.

A GUILD FOR AVIATORS.

The following letter from an R.A.F. padre deserves the attention of all aviators :—

Sir,— May I submit some observations and suggestions with regard to the interesting article which appeared in The Aeroplane of Sept. 11th, on " The Patron Saint of Aviators," in the hope that as the result of the expression of opinions from brother Anglican padres something may come of your idea of a Guild among aviators which would not be confined to the Roman Communion.

On the general subject of " flying " in the Scriptures, I might mention an interesting chapter (Ezekiel I.), where the prophet has a vision of " four living creatures " borne " on a strong wind which came out of the North."

It would seem that these creatures had instructions which allowed of only straight flying, as we are told that " they went everyone straight forward," and " they turned not when they went." However, when presumably out of sight of the aerodrome they could not abstain altogether from " stunting." There is evidence to show that they " rolled," possibly looped, and certainly indulged in steep spirals, for we read, " when they went, they went upon their four sides," and again, " as for their rings they were high and dreadful."

It is interesting to notice also that these flying creatures were supplied with under-carriages, for it is written, "And when the living creatures went the wheels went with them; and when the living creatures were lifted up from the earth the wheels were lifted up."

Broadly speaking, however, the references to " flying " in the Scriptures are so vague (even the Archangel Michael's claims to airmanship being decidedly nebulous) that I should prefer, in all reverence, to call any Anglican Guild which might be founded the Guild of the Ascension—Royal Air Force. May I suggest (in addition to a title which would not clash with Father Morgan's Guild of St. Michael for Airmen) a few points for possible incorporation in the scheme :—

1. That the aim of the Guild should be the " strafing " of Satan in all his works. St. Luke x, 18: " I beheld Satan as lightning fall from Heaven," i.e., " shot down in flames and seen to crash."

2. That the motto of the Guild be, " They that wait upon the Lord shall renew their strength, they shall mount up with wings as eagles " (Isaiah xl, 31).

3. That the festival day for the Guild shall naturally be Ascension Day, and that a special Eucharist should be offered in Royal Air Force stations on that day.

4. Pending the definite appointment of a chaplain-in-chief to the Royal Air Force (who would probably accept the office of first president), that chaplains of stations be asked to collect names of officers and men willing to become members of the Guild.

(Signed) Augustine.

[The editor will be pleased to put both padres and aviators in touch with the writer of the foregoing letter if they will write " Augustine," care of The Aeroplane, 166, Piccadilly, W.1.]

MAJOR BAIRD'S BOUQUETS.

According to the "Times," Major Baird, speaking at a well-reported private dinner, said :—We owe more to the American than to any other nation of the world as regards the air. The Air was conquered by the Wright Brothers. It was their faith and their pluck which made it possible, primarily, for the men to fly to-day, to do the wonderful things in the air which we see them every day of our lives doing. When the amount of men and material becomes limited I think there is no doubt that you can produce more effect upon the enemy, and do more towards shortening the war, by turning out airmen and aero-engines than perhaps any other sphere of military activity.

General Brancker, whom we deputed to go over to America at your request, sends this message to you :—" Please tell our American friends that they have got an unlimited supply of the most magnificent pilots that it is possible to imagine." Well, that of course you know.

He said, "Tell them also that the Liberty engine is a far finer production than even they seemed to guess." Here we are all agreed that the Liberty engine is a wonderful production.

People think that the war may be ended from the air. I think those of us who are closely connected with the air doubt very much whether it can be done from the air alone. It is quite likely, I think, that the air will prove the last straw. Although aviation may not finish the war, it is fair to say that aviation may make all other wars impossible, because carried to a logical conclusion an air force can be developed to such an extent that the idea of war from the air is so appalling that the human race won't stand it.

Out of this marvellously efficient war weapon it is conceivable that we should forge a weapon for peace more potent perhaps than any other weapon.

[Judging by the last few sentences one is almost tempted to believe that Major Baird has been reading The Aeroplane and is beginning to show almost human intelligence concerning aviation.—Ed.]

AN R.A.F. HOLIDAY.

The fates have been unkind to R.A.F. holidays of late, and sports have been either cancelled or postponed for weeks owing to the rotten weather. However, after one postponement on September 6th, the *x*th and umpty-third wings of the R.A.F., who were to have held their combined sports at Maidstone on the 13th, defeated the weather by enjoying themselves in-doors The proprietors of the Palace Theatre generously placed it at the disposal of the Air Force and a combined concert and boxing tournament was held. The talent was entirely home-grown, from the accompanist upwards, or downwards according to the point of view. Even the songs, sentimental and comic, were taken from the official R.A.F. song-book. One has not the names of the performers, but they included a particularly good quartette, a really funny comedian, and an excellent flight-serjeant baritone. The catholic taste of the R.A.F. audience was shown by the fact that singers and boxers were equally applauded.

The boxing was of quite high quality. After several preliminary bouts, all well contested, the star turn of the day was produced, a ten-round fight between Air-Mechanic Lilley ex-champion heavy-weight of South Africa, and Corporal-of-Horse Tregaskis of the Royal Horse Guards, the latter a long-limbed Cornishman with a terrific punch. His reach and hard-hitting, however, did not make up for Lilley's ring-craft and experience, and Lilley was certainly winning handsomely when Tregaskis threw up the sponge in the fifth round, owing to a sprained thumb.

Thereafter there was a sporting sparring match between Lts. Oulton and Baird, both of whom are quite pretty boxers. This was followed by a fierce scrap between Maj. G. Murlis-Green, D.S.O., M.C., and Maj. T. Sowry, D.S.O., M.C., whose methods of attack and rapidity of movement permitted one to understand how they came by their multifarious decorations. Both these fights were declared by the referee to be draws, and produced riotous applause from the assembled multitude. Finally, there was a very good fight between Air-Mechanic Hunt and Cadet Peyton, which was given in favour of the former, though it was a near thing either way.

Lt.-Col. Minchin and Lt.-Col. Thomson, commanding the two Wings concerned, and Mr. Foster-Clarke, Mayor of Maidstone, more or less jointly presided over the proceedings, which were graced by the presence of a number of the more important sex. In the evening a number of the officers of the two Wings held a dinner in Maidstone, from which dinner speeches were commendably absent, and thereafter a dance was held at the Corn Exchange. So altogether the R.A.F. did not do too badly, thank you, in spite of the weather. Anyhow, one of the visitors, at any rate, hereby vouches for the fact that he enjoyed himself very much.—C. G. G.

THE R.A.F. MEDICAL SERVICE.

On October 1st next all medical officers and other ranks, Royal Army Medical Corps, employed exclusively with the Royal Air Force will be transferred or attached to the Royal Air Force unless, before that date, they give notice of objection.

Medical officers and dental surgeons holding temporary commissions will be required to relinquish their temporary commissions in the R.A.M.C. or General List respectively. A *pro rata* gratuity will be issued where an officer is serving under a yearly contract which has not expired. Officers belonging to the Regular, Special Reserve, or Territorial Force, Royal Army Medical Corps, will be attached to the R.A.F., and continue to serve on the conditions of their present terms of service.

THE W.R.A.F. WRANGLE.

The Principal of Birkbeck College writes to the "Times" to point out that Mrs. Gwynne-Vaughan, the new commandant of the W.R.A.F., was not a professor at King's College, but was head of the Botany Department at Birkbeck College from 1909 till her appointment as Controller of the W.A.A.C. She was a distinguished former student of King's College.

THE ST. MIHIEL PUSH.

The "Times" correspondent with the American Army in France writes on Sept. 14th, as follows :—

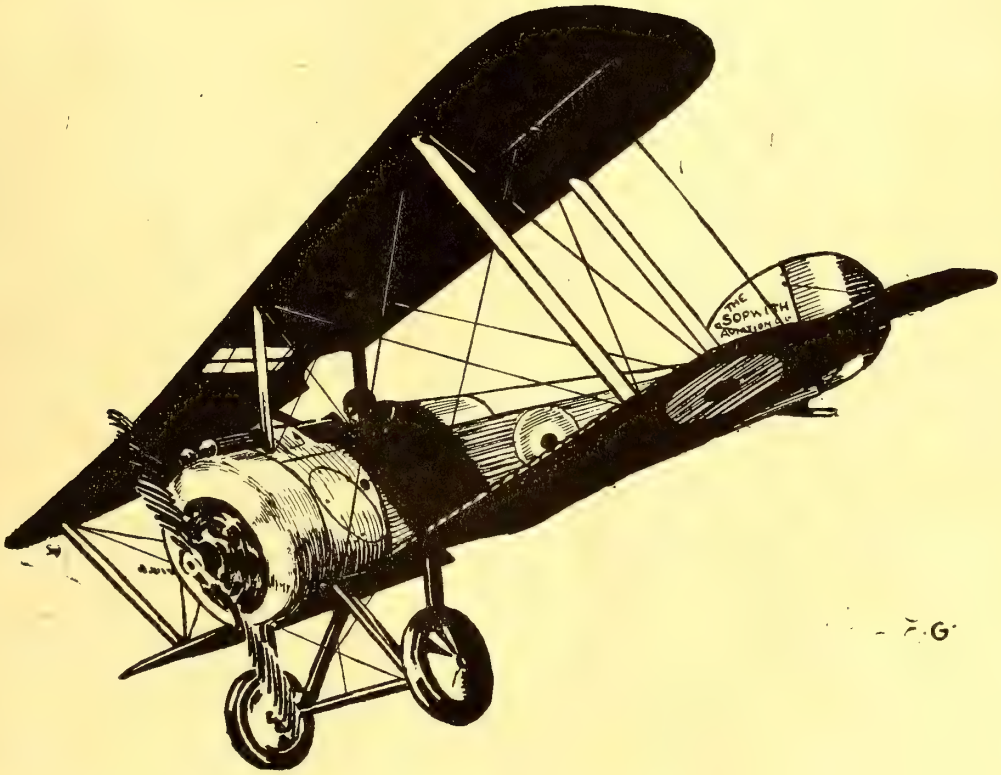
Complete aerial supremacy rested with General Pershing. Unfortunately, a heavy day with light rain, and thick, low-lying clouds greatly handicapped the aviators, but, on the other hand, the Germans were unable to make observations during the 48 hours preceding the attack. Early on Thursday morning a very troublesome German balloon at Mareuilles, across the Moselle, was shot down. All through the battle, reconnaissance machines gave aid to the infantry and artillery, and bombing planes attacked troops and railways and hampered the German retreat. The Liberty Motor had its first trial in actual battle on a large scale, and proved a tremendous success.

AMERICANS ERRANT.

The following official statement was issued at Berne on Sept. 12th :—

"On Thursday morning (Sept. 5th?) an American aeroplane landed near Chevenez. It continued its flight, but landed again near Fahy. The two aviators have been handed over to the Swiss military authorities."

THE SOPWITH



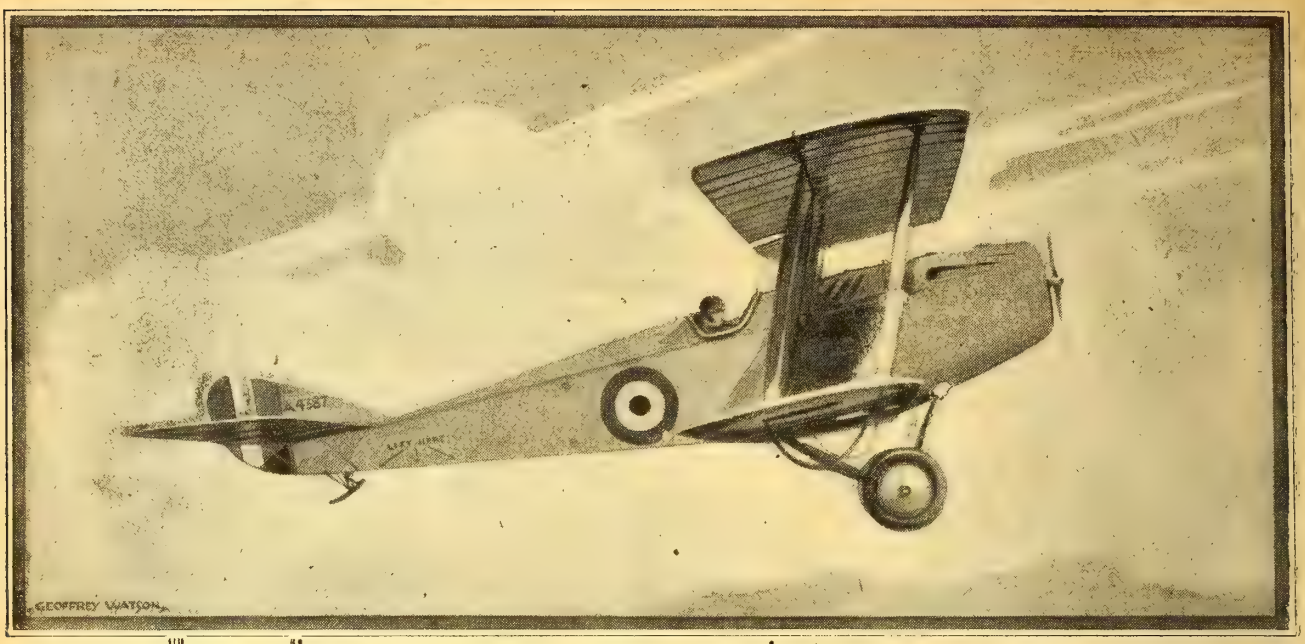
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FROM THE "LONDON GAZETTE."

AIR MINISTRY, Sept. 10th.

R.A.F.—The following temporary appts. are made at the Air Ministry:—Inspector-General.—Maj.-Gen. Sir G. M. Paine, K.C.B., M.V.O., Aug. 22nd.

Master-General of Personnel.—Maj.-Gen W. S. Brancker, A.F.C., Aug. 22nd.

Controller-General of Equipment.—Maj.-Gen. E. L. Ellington, C.M.G., Aug. 22nd.

Staff Officer, 2nd Cl.—Lt. (temp. Capt.) E. B. Barker, and to be temp. Maj. while so empld., vice Capt. (temp. Maj.) H. J. de C. Moore, who now relinquishes the temp. rank of Maj., Sept. 1st.

The following temporary appts. are made:—Brigade Comdr.—Lt.-Col. (temp. Brig.-Gen.) E. R. Ludlow-Hewitt, D.S.O., M.C., and to retain his temp. rank while so empld., May 23rd.

Staff Officers, 2nd Cl.—And to be temp. Majs. while so empld. if not already holding that rank:—A. T. A. Dobson (Lt., Hamps. R.), and is granted a temp. commn. as Lt., June 30th (Air). Capt. C. B. Krabbé, vice Capt. (temp. Maj.) H. W. M. Paul, M.C., June 29th; Capt. R. B. C. M. T. de Poix, July 1st (P.); F. H. L. Errington, C.B. (Lt.-Col., T.F. Res.), and is granted a temp. commn. as Maj., and to be Hon. Lt.-Col); Lt. F. J. Lees, April 6th; F. S. A. Baker (Capt, Sea. Highrs.), and is granted a temp. commn. as Capt., April 10th, B. W. Bentinck (temp. Capt., Gen. List, New Armies), and is granted a temp commn. as Capt, May 5th; D. L. Ingpen (temp. Capt., Gen. List, New Armies), and is granted a temp. commn. as Capt., May 28th; H. S. Morris (Lt., C. Gds, Spec Res.), and is granted a temp. commn. as Lt., June 25th; Lt. (temp. Capt.) E. J. Briscoe, Aug. 1st.

Staff Officers, 3rd Cl.—And to be temp. Capts. while so empld. if not already holding that rank:—Capt. G. C. Corry-Smith, June 1st (Air). H. R. P. Reynolds (Bt.-Maj., R.E.), and is granted a temp. commn. as Capt., and to be Hon. Maj., May 17th; Lt D. F. Cox, Aug. 15th. (P.).—L. M. Boddam-Whetham (Capt., R. W. Surr. R.), and is granted a temp. commn. as Capt., June 16th; C. E. J. Trafford, M.C. (Lt., S. Gds., Spec. Res.), and is granted a temp. commn. as Lt., Aug. 1st.

FLYING BRANCH.—Capt. A. S. Maskell to be temp. Maj. while empld. as Maj. (A.), Sept. 10th.

Lts. (Hon. Capts.) to be temp. Capts. while empld. as Capts. (A.):—W. D. Jackson, D. K. Thyne, W. S. Wilson, Aug. 1st.

Lts. to be temp. Capts. while empld. as Capts. (A.):—S. Jones, Sept. 3rd; C. A. Brown, G. J. H. Lascelles, N. F. Northam, R. W. Reid, M.C., G. W. Shuter, C. A. F. Whitley, M.C., F. G. S. Williams, Sept. 5th

Capt. (temp. Maj.) H. A. Smith, M.C., relinquishes his temp. rank on reversion to Capt. (A.) from (S.O.), Sept. 3rd

Lt. N. McN. Beaton to be temp. Capt. while empld. as Capt. (K.B.), Aug. 26th.

Capt. D. C. Ware reverts to Lt. (A.) at his own request, Aug. 7th.

Lts to be Lts. (Dir.):—H. A. Eldridge-Green, from (Ad.); A. D. Light, from (O.), Aug. 26th.

Lt. (temp Capt.) E. L. B. Buchanan to be Lt. (temp. Capt.) (Dir.), from (K.B.), July 17th.

Lts. (K.B.) to be Lts (Dir.):—W. A. Lane, T. G. Greenwall, July 17th.

Sec. Lts. (late Gen. List, R.A.F., on prob.) are confirmed in their rank as Sec. Lts. (A. and S.):—M. Dearman, May 24th; N. Farson, June 25th; W. H. Bayley, June 29th; R. A. Caldwell, July 31st; W. F. Simpson, Aug. 9th; C. F. Cave, Aug. 10th; J. L. Airey, Aug. 11th; C. Davidson, H. J. Challis, J. Mackintosh, Aug. 12th; F. H. Hall, H. McClunan, F. B. Peacock, D. McKellar, Aug. 13th; R. A. Eldridge, B. E. Taylor, A. T. Taylor, Aug. 16th; B. M. Evans, Aug. 17th.

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (A. and S.):—R. M. Bennet, W. O. Jones, J. R. Barrett, A. H. Hull, E. F. Mattock, O. A. Kempe, R. W. Walls, A. M. Perrins, J. M. Welshman, W. F. A. Snell, P. G. Deedes, V. C. S. Bach, W. Smith, H. Copper, D. E. Culver, E. G. Woods, May 15th; H. C. E. Adlard, T. B. Anderson, Aug. 9th; J. A. Phillips, Aug. 10th; R. L. Bonham, J. M. Catto, Aug. 12th, H. F. Mulhall, Aug. 14th; R. N. Riddell, G. A. Ballantyne, Aug. 15th; W. Manning, M. Whitehead, W. J. Kelly, W. R. O. Midgeley, Aug. 17th.

The following are granted temp. commns. as Sec. Lts. (A. and S.):—B. W. Cotterell (Sec. Lt., Notts and Derby R., Spec. Res.), Aug. 10th; E. J. Leedle (temp. Lt., E. Yorks. R.), and to be Hon. Lt.; E. G. Birkbeck, M.C. (Lt., N. Staff. R.), and to be Hon. Lt., Aug. 11th; F. L. Johnson, M.M. (Cont. Ont. R., C.E.F.), and to be Hon. Lt.; F. A. Markham (Lt., R. Lanc. R., Spec. Res.), and to be Hon. Lt., Aug. 12th; D. J. Lewis (Sec. Lt., York. R., Spec. Res.), H. A. Francis (Lt., Brit. Col. R., C.E.F.), and to be Hon. Lt., Aug. 13th; J. Brewster (Sec. Lt., R. Berks R.), Aug. 14th; W. H. A. Monckton (temp. Sec. Lt., K.R.R.C.), Aug. 15th; T. Hargreaves (temp. Sec. Lt., E. Lanc. R.), K. G. Welch (Sec. Lt., R.G.A., T.F.), H. G. Watson (temp. Capt., Manch. R.), and to be Hon. Capt., Aug. 17th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A. and S.):—W. J. McDonough, July 9th; T. Madoc-Jones, July 19th; B. Louttit, July 26th; P. Bebbington, S. B. Atkinson, Aug. 23rd; H. C. Murray, J. B. Richardson, G. M. Miller, A. H. Gooch, A. J. M. Ozmond, W. G. Walters, S. Lee, Aug. 24th; G. L. Smith, W. R. N. Whiston, J. B. MacIntyre, W. Taylor, L. G. Stockwell, F. A. Hickson, Aug. 25th; N. G. Forester, B. J. Forester, H. C. Parks, A. S. Birss, J. C. Urquhart, T. S. Anderson, E. Tomkins, T. D. Edgar, A. Avery, C. Tomlinson, Aug. 26th; E. R. Walker, D. Croft, H. F. Barlow, Aug. 27th; C. R. Wolfendale, Aug. 28th; G. W. Moore, Aug. 29th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (Dir.):—S. Vaughan, F. Van Praagh, July 17th; J. Gibson, July 23rd.

The following prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (Dir.) (substituted for notification in "Gazette," May 7th):—L. E. F. Dale, C. S. W. Hall, April 10th; L. D. Brown, W. N. Shuttleworth, April 17th; D. G. Wassell, J. A. E. Steel, April 26th

The following prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (Dir.):—B. N. Radford, April 3rd; C. W. Seymour-Hall, April 10th; G. H. A. Cordwent, H. Perkins, E. R. Sanderson, I. M. M. Perman, May 15th; C. G. J. Whiteside, C. F. Lamb, A. Patchett, C. H. Bingham, May 27th; L. Goater, J. R. Heming, F. S. Jones, May 29th; J. H. L. Kirby, June 19th; C. W. S. James, June 24th; W. K. Crockett, W. L. Andrews, A. G. Hatton, R. Hooley, June 26th; M. F. R. Plowman, July 17th; C. W. Goodwin, L. S. Collard, F. F. G. Hepworth, A. T. Batchelor, J. O. F. Carrall, July 31st; R. R. Mutton, P. C. Drummond, W. W. Ruddock, Aug. 13th.

The following are granted temp. commns. as Sec. Lts (Dir.):—R. F. Saunders (Sec. Lt., R. W. Surr. R., T.F.), V. A. Peers (temp. Sec. Lt., R. War. R.), June 24th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (K.B.):—W. D. Allan, Aug. 15th; A. E. Hopkins, T. C. Lewis, N. L. Mayle, Aug. 20th.

The following prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (K.B.):—H. M. W. Cuthbert, P. Cunningham, July 23rd; V. C. D. Kent, Aug. 7th.

The following are granted temp. commns. as Sec. Lts. (K.B.):—W. Coker (Lt., E. Surr. R.), and to be Hon. Lt.; H. V. Drew (temp. Lt., attd. Yorks. L.I.), and to be Hon. Lt., Aug. 1st; J. J. T. Rose (Lt., Oxf. and Bucks L.I., Spec. Res.), and to be Hon Lt.; J. H. Gray (temp. Sec. Lt., Linc. R.), Aug. 20th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (Obsr. Officers):—A. Sykes, J. Spencer, April 1st; W. G. I. Bodley, May 21st; F. E. Peters, May 25th; C. Sweetman, June 1st; A. H. Watters, J. P. Armitage, J. Stott, J. Miller, A. K. Barter, Aug. 16th; S. St. C. Stone, H. S. Orange, Aug. 23rd; V. T. Harwood, Sept 7th.

Prob. Obsr. Officer A. P. Knightsbridge (late R.N.A.S.) is granted a temp commn. as Sec. Lt (Obsr. Officer), April 30th.

The following are granted temp. commns as Sec. Lts. (Obsr. Officers):—G. R. Harrison (Lt., N. Brunswick R., C.E.F.), and to be Hon. Lt., A. G. Smalley (Lt., W. Rid. R., T.F.), and to be Hon. Lt., E. A. Westall (Sec. Lt., Sco. Rif.), G. J. L. Campbell (Sec. Lt., Lond. R., T.F.), H. A. Pike (temp. Sec. Lt., attd. S. Lan. R.), L. R. McKenna (Lt, E. Ont. R., C.E.F.), and to be Hon. Lt., C. R. Goss (Lt., Manitoba R., C.E.F.), and to be Hon. Lt., April 1st; C. A. Hutchins (temp. Sec. Lt., Glouc. R.), April 6th; W. G. Hanton (Sec. Lt., Lond. R., T.F.), April 7th; D. S. St. A. McCulloch (Sec. Lt., Dorset R., Spec. Res.), R. J. R. Ward (temp. Sec. Lt., Leic. R.), April 16th; R. F. Casey (temp. Sec. Lt., attd. R. Innis. Fus.), May 1st; J. A. Whalley (temp. Sec. Lt., Lab. Corps), May 16th; H. Jones (temp. Lt, Welsh R.), and to be Hon. Lt., W. E. Crombie, M.C. (Lt., R. War. R., T.F.), and to be Hon. Lt., S. E. Towill (Lt., Yorks, Hrs. Yeo., T.F.), and to be Hon. Lt., G. W. Mitchell (temp. Lt., E. York. R.), and to be Hon. Lt., Aug. 16th; C. H. Thompson (Sec. Lt., York and Lanc. R., T.F.), G. G. Bannerman (temp. Lt., R.E., I.W.T.), and to be Hon. Lt., H. S. Gargett (Lt., Durh. L.I., T.F.), and to be Hon. Lt., G. McCormack (temp. Lt., R. Ir. Rif.), and to be Hon. Lt., R. S. E. Walshe (Sec. Lt, R. War. R., T.F.), Aug. 22nd; W. S. Woodall (temp. Sec. Lt., attd. Northn. R.), C. T. Linford (temp. Lt., Res. R. of Cav.), and to be Hon. Lt., A. N. Eyre (Lt., Notts and Derby R., T.F.), and to be Hon. Lt., A. H. Penstone (Sec. Lt., R. Suss. R., T.F.), A. C. Heyes (temp. Sec. Lt., R. Fus.), M. E. Barlow (temp. Sec. Lt., Manch. R.), J. W. Davies (Sec Lt., Glouc. R., T.F.), J. H. Perring (temp. Lt., attd. Welsh R.), C. R. Cook (temp. Lt., Shrops. L.I.), and to be Hon. Lt., H. S. Slinger (temp. Sec. Lt., Lpool. R.), F. W. A. G. Middlecote (temp. Sec. Lt., K.R.R.C.), Aug. 23rd; T. L. Hill, M.C. (Lt., Essex R., T.F.), and to be Hon. Lt., Sept. 7th.

The following Flt. Cadets are granted temp commns. as Sec. Lts. (Obsr. Officers):—H. L. Jones, Aug. 31st. O. W. Clarke, F. R. Eveleigh, A. Woodward, J. H. Hall, E. J. Thompson, C. H. L. Needham, R. H. Cole, W. R. Dallas, J. F. Russel, G. E. Williams, C. C. Eaves, W. J. Boon, C. A. Spooner, A. Russell, J. R. Robson, B. Riley, S. Perkins, F. Reay, R. F. Tomlinson, R. V. Richardson, J. W. Robertson, G. H. Carr, S. Whitehead, F. L. Strangward, P. J. Swan-Taylor, B. Heaton, S. L. Simpson, W. T. S. Cairns, N. C. B. Carrick, H. D. Beresford, R. Whitfield, J. H. Fitz-Gerald, G. F. Robinson, J. C. Marlton, E. P. Sansom, A. Taylor, F. L. McHenry, W. R. Tomlinson, J. W. Sampson, Sept. 7th; C. D. Macdonald, J. W. Neil, E. S. Oxley, R. S. Stainsby, C. C. Salmon, W. H. Tyler, F. W. Woolley, J. Warren, L. Wilson, G. W. Wadison, Sept. 9th.

Sec. Lt. (A.) C. A. James is dismissed the Service by sentence of a General Court-martial, Aug. 21st.

Lt. (Hon. Capt.) E. S. Boynton relinquishes his commn. on account of ill-health, and is granted the hon. rank of Capt., Sept. 11th.

The following Lts. relinquish their commns. on account of ill-health contracted on active service, and are granted the hon. rank of Lt.:—E. H. Lascelles, W. Perkins, Sept. 11th.

Lt. (Hon Capt) H. J. Bath resigns his commn. and is granted the hon. rank of Capt., Sept. 11th.

Sec. Lt. L. T. A. Robinson relinquishes his commn., having been found permanently unfit for further instruction as Pilot or Obsr., Sept. 11th.

The notification in "Gazette," Aug. 23rd, concerning Sec. Lt. G. H. Brown is cancelled.

The surname of Flt. Cadet Arthur Whichelow is as now stated and not as in "Gazette," July 23rd (substituted for notification in "Gazette," Aug. 30th).

Administrative Branch.—Maj. F. A. G. Noel to be temp. Lt.-Col. whilst empld. as Lt.-Col., May 28th.

Lts. to be temp. Capts. whilst empld. as Capts.:—J. S. Curtis, June 1st; A. W. Turner, June 13th.

Sec. Lt. W. R. Fairbairn to be temp. Capt. whilst empld. as Capt., June 13th.

Sec. Lt. (Hon. Lt.) M. C. Caley to be Lt., April 25th.

Sec. Lts. to be temp. Lts. whilst empld. as Lts.:—R. A. C. Cradock-Hartopp, June 13th; D. H. Etheridge, Aug. 28th.

Lts. (O.) to be Lts.:—C. E. Channing, H. G. Wildbore, M.C., June 13th.

Lt. A. Watson to be Lt. from (A.), Aug. 27th.

Lt. F. L. Simmons to be Lt., from (K.B.), Sept. 8th.

Sec. Lt. G. L. McLean (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt., Aug. 23rd.

The following are granted temp. commns. as Sec. Lts.:—O. W. Owen (Sec. Lt., attd. S. Wales Bord.), June 23rd; H. N. Turner (temp. Sec. Lt., Lab. Corps), July 19th; S. O. Saville (Sec. Lt., R.N.V.R.), July 20th; E. Staples (Sec. Lt., Linc. R., T.F.), Aug. 19th; A. E. H. Hales (temp. Sec. Lt., R.E.), Aug. 21st; P. A. Shaw, Sept. 4th; F. O. Finn, T. Mitchell, S. R. Lewis, L. A. Parker, H. Randall, L. A. Briggs, R. L. Wills, Sept. 7th; R. C. Hill, C. F. P. Davies, Sept. 9th.

Sec. Lt. A. W. M. Bryant to be Sec. Lt., from (A. and S.), Aug. 23rd.

Sec. Lts (Tech.) to be Sec. Lts.:—R. K. McLean, July 1st; F. E. Hudson, Aug. 8th.

Capt. (temp. Maj.) G. L. Main is removed from the Service, the King having no further occasion for his services as an officer, June 3rd.

Sec. Lt. (Hon. Lt.) A. W. Hughes relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lt., Sept. 11th.

Sec. Lt. E. H. Cree relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., Sept. 11th.

The following Sec. Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Sec. Lt.:—A. A. Chapman, W. E. Clarke, H. Saville, Sept. 11th.

Sec. Lt. T. Bathurst resigns his commn., Sept. 11th.

The notification in "Gazette," June 20th, concerning R. W. Simpson is cancelled.

Technical Branch.—Maj. (temp. Lt.-Col.) Lord A. R. Innes-Ker, D.S.O., retains his temp rank while empld. as Lt.-Col, from (A. and S.), June 13th.

To be temp. Majs. while empld. as Majs.:—Capt. I. O. Griffith, Lt. (temp. Capt.) W. C. Mitchell, June 21st.

Lts. to be temp. Capts. while empld. as Capts.:—(Hon. Capt.) D. A. English, April 26rd; M. Campbell, from (A. and S.), June 13th; J. Page, Aug. 1st.

Capt. O. S. Moseley-Leigh to be Capt., from (Ad.), June 13th

Sec. Lts. (Hon. Lts.) to be temp. Lts. while empld. as Lts.:—S. A. Alder, Aug. 28th; R. A. Law, Sept. 4th.

Lt. W. S. Mathews to be Lt., from (A. and S.), June 13th.

Lts (O.) to be Lts.:—S. W. Bunting, S. J. Hunter, E. H. Wilson, June 13th.

Lts. (A. and S.) to be Sec. Lts and to be Hon. Lts.:—T. M. O'Neill, Aug. 17th; A. Ginger, Aug. 28th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts.:—E. T. Fountain, June 22nd; E. C. King, July 5th; E. A. O. Hobart-Hampden, Aug. 10th.

Sec. Lts. (Admin.) to be Sec. Lts.:—T. G. Callard, June 10th; H. S. Adams, J. H. Everett, C. L. Champion, Aug. 24th.

Sec. Lt. H. Grant to be Sec. Lt., from (Obsr. Officer), July 1st.

Lt. R. Kearton to be Sec. Lt. and to be Hon. Lt., from (Obsr. Officer), Aug. 22nd.

The following are granted temp. commns. as Sec. Lts.:—C. W. Burgess (temp. Lt., New Armies, Gen. List), and to be Hon. Lt., June 21st; C. D. de Pinna (Lt., Lond. R., T.F.), and to be Hon. Lt., June 28th; C. H. Macnutt (Lt., Can. Engrs., C.E.F.), and to be Hon. Lt., July 24th; H. F. M. Nash (temp. Lt., E. Surr. R.), and to be Hon. Lt., Aug. 3rd; T. H. White (Lt., Hamps. R., Spec. Res.), and to be Hon. Lt., Aug. 10th; C. Parker (temp. Lt., M.G.C.), and to be Hon. Lt., Aug. 11th; T. G. S. Babb (Lt., R.E., T.F.), and to be Hon. Lt., Aug. 13th; F. White (temp. Sec. Lt., R.E.), Aug. 24th.

Maj. (temp. Lt.-Col.) G. C. R. Mumby is dismissed the Service by sentence of a General Court-martial, Sept. 11th.

Lt. (temp. Capt.) T. Holmes relinquishes his commn. on account of ill-health, and is granted hon. rank of Capt., Sept. 11th.

Lt. D. B. James relinquishes his commn. on account of ill-health contracted on active service, and is granted hon. rank of Lt., Sept. 11th.

The following Sec. Lt. relinquish their commns. on account of ill-health, and are granted the hon. rank of Sec. Lts.:—S. E. Brett, P. E. Jeffcock, Sept. 11th.

Medical Branch.—J. N. Macdonald (late Capt., R.A.M.C.) is granted a temp. commn. as Capt., Sept. 7th.

T. M. Davies is granted a temp. commn. as Lt., Sept. 6th.

Medical Branch (Admin.).—H. J. Beale is granted a temp. commn. as Sec. Lt., Sept. 9th.

Memoranda.—Lt. R. E. Johnson is granted the temp. rank of Capt. while empld. as Staff Officer, 3rd Cl., June 25th.

Sec. Lt. (Hon. Lt.) A. Ward is granted the temp. rank of Capt. (without pay and allowances of that rank) while holding a special appt. under the Ministry of Munitions, Aug. 25th

The date of appt. of Maj. (Hon. Lt.-Col.) V. A. F. V. Russell is April 5th, and not as stated on page 9383 of the "Gazette," Aug. 9th.

The date of appt. of Capt. W. S. Evans is May 24th, and not as in "Gazette," Aug. 6th.

Capt. (temp. Maj.) C. H. Rowe relinquishes his commn on account of ill-health contracted on active service, Sept. 11th.

War Office, Sept. 12th.

The following are among the Decorations and Medals awarded by the Allied Powers at various dates to the British Forces for distinguished services rendered during the course of the campaign:—

His Majesty the King has given unrestricted permission in all cases to wear the Decorations and Medals in question.

Decorations and Medals conferred by His Majesty the King of Italy.

Silver Medal for Military Valour.

Temp. Capt. William George Barker, D.S.O., M.C., R.F.C.
Lt. (temp. Capt.) Robert Sydney Pearce Boby, Lanc. Fus. and R.F.C.
Temp. 2nd Lt. Julius Edward Bonniksen, R.F.C.
Temp. Capt. Matthew Brown Frew, D.S.O., M.C., R.F.C.
Capt. William Earle Molesworth, M.C., R. Munster Fus. and R.F.C.

Bronze Medal for Military Valour.

1429 Serjt. Ernest John Elton, R.F.C. (Wimborne, Dorset).
7228 Air Mech., 1st Cl., Charles Henry M'Carthy, R.F.C. (Rotherhithe, S.E.).
7061 Serjt. Sidney Robert Marston, R.F.C. (Liscard, Cheshire)
59404 Serjt. Angus Holden Muff, R.F.C. (Bankfoot, Bedford).
10219 Air Mech., 1st Cl., George Edward Richardson, R.F.C. (Grantham).
113031 Serjt. James Ryan, R.F.C. (Canton, Cardiff).
3116 Serjt. Walter Ernest Smith, R.F.C. (Bowes Park, N.).

Air Ministry, Sept. 13th.

R.A.F.—The following temp. appt. is made at the Air Ministry:—Staff Officer, 1st Cl.—(P.).—Capt. (temp. Lt.-Col.) W. O. Raikes, M.B.E., and to retain his temp. rank whilst so empld., vice Maj. (temp. Lt.-Col.) W. J. Ryan, M.B.E., Sept. 2nd.

The following temp. appts. are made:—Group Comdr.—Lt. Col. F. H. Kirby, V.C., D.C.M., and to be temp. Col. whilst so empld., vice Lt.-Col. (temp. Col.) R. H. Collier, D.S.O., who relinquishes the temp. rank of Col., Aug. 27th.

Staff Officers, 1st Cl.—And to be temp. Lt.-Cols. whilst so empld., if not already holding that rank:—Maj. T. E. Gilmore, June 1st. (P.).—Maj. (temp. Lt.-Col.) W. J. Ryan, M.B.E., Sept. 2nd. (T.).—Maj. (temp. Lt.-Col.) R. W. Roylance, May 15th.

Staff Officers, 2nd Cl.—And to be temp. Majs. whilst so empld., if not already holding that rank:—(P.).—Maj. A. Corbett-Wilson, Maj. H. Dodd, Capt. A. E. Hawker, Capt. C. G. V. Hewson, Lt.-Col. J. W. L. Hunt, Capt. E. R. Whitehouse, Capt. N. V. Wrigley, Aug. 20th.

Staff Officers, 3rd Class.—Capt. T. L. Tillie, June 1st (Air.).—Capt. W. J. Salaman, vice Lt. (temp. Capt.) S. J. Smith, July 17th.

Flying Branch.—Capt. (temp. Maj.) A. K. Tylee to be temp. Lt.-Col. whilst empld. as Lt.-Col. (A.), April 1st.

Lt. (temp. Capt.) C. W. Scott to be temp. Maj. whilst empld. as Maj. (A. and S.), Aug. 23rd.

Capt. H. de V. Leigh to be temp. Maj. while empld. as Maj. (S.), Sept. 6th.

Lts. to be temp. Capts. while empld. as Capts.:—(A.) (Hon. Capt.) A. M. FitzRandolph, Aug. 8th; J. L. White, D.F.C., Aug. 9th; E. H. P. Cave, E. D. Fanshawe, S. G. Frogley, H. R. Gardner, R. V. Gove, B. H. Hunt, A. G. Lamplugh, C. E. W. Lockyer, A. D. Makins, S. P. Marcus, W. Sharpe, Aug 10th; T. W. Nash, Aug. 13th; A. Rice-Oxley, D.F.C., Aug. 16th; W. Grossart, D. R. Mackie, M.C., F. R. Offord, J. J. Williamson, Aug. 23rd; B. G. H. Keymer, Aug. 28th; A. R. Cross, B. A. S. Lewin, Aug. 30th; A. W. Vigers, M.C., Sept. 1st; H. P. Lloyd, M.C., Sept. 6th.

Capt. (temp. Maj.) G. Disney relinquishes his temp. rank on reversion to Capt. (K.B.) from (S.O.), Aug. 26th.

Lt. (Hon. Capt.) J. A. Macnab to be temp. Capt. while empld. as Capt. (O.), Aug. 1st.

Lt. (Hon. Capt.) J. Hodson to be temp. Capt. while empld. as Capt. (S.), Aug. 8th.

Lts. (Obsr. Officers) to be Lts.:—(A. and S.) E. R. Bruce, Aug. 1st; J. A. Stedman, Aug. 10th; W. P. Busher, Aug. 17th; F. Shingleton, Aug. 18th; G. G. Williams, Aug. 20th; J. T. Richardson, Aug. 23rd; (Hon. Capt.) J. R. Walker, and to be Hon. Capt., Aug. 23rd; E. O. Houghton, Aug. 24th; N. S. Dewey, M.C., Aug. 26th.

Capt. H. F. Alton to be Lt. (A. and S.), and to be Hon. Capt., from (T.), Aug. 27th.

The following Flt. Cdts. are granted temp. commns. as Sec. Lts.:—(A.) A. E. Willis, Aug. 26th; C. M. Doolittle, L. A. Stammer, S. G. Smith, C. C. Fox, Aug. 27th; E. S. Adamson, T. Lamb, J. W. Sandham, Aug. 28th; B. L. Clift, W. Baldwin, S. C. Rainbow, R. Stuart, D. S. Huskisson, Aug. 29th; H. G. Wallington, G. S. Black, R. G. Hilton, A. W. Mumford, W. G. Coulthurst, Aug. 30th; E. W. Dewell, Aug. 31st.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A.):—B. Herbert, April 8th; J. C. Edwards, April 13th; W. R. Thomson, May 15th (substituted for notification in "Gazette," July 5th; J. E. Machin (since deceased), May 19th (substituted for notification in "Gazette," July 28th); J. Pollins, June 10th; R. R. Beebe, June 14th; P. C. W. Adams, June 30th; R. J. Whitaker, July 8th; W. A. Rymal, July 23rd; A. H. Allingham, A. Shepherd, July 31st; V. D. Smith, Aug. 1st; J. E. P. Levyus, E. C. F. D. Jacquier, Aug. 9th; H. Proudlove, A. S. Jones, M. McLean, Aug 15th; W. Walker (date of first commn., March 7th); L. T. Corbett, Aug. 20th; S. F. Case, Aug. 21st; D. McI.Easton, Aug. 23rd; S. Campan, G. C. Cole, A. L. Hadlow, Aug. 24th; G. T. Porter, Aug. 25th; J. A. MacDonald (date of first commn., Feb. 21st), Aug. 27th; H. A. Murton, Aug. 29th.

The following prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (A. and S.):—W. R. Reid, June 2nd; R. M. Muirhill, E. D. Smith, M. J. Hennessy, F. A. Huycke, W. A. McLeod, M. D. McPherson, G. R. Grange, June 14th; N. C. Wiseman, June 25th; A. J. R. Murray, June 27th; R. H. Boyden, July 28th; A. G. West, July 29th; A. J. O'Neill, H. F. Cullen, July 30th; G. E. Newton, July 31st; J. B. Corstorphine, Aug. 9th; W. A. Chase, G. H. Phillips, Aug. 14th; O. P. Bewers, Aug. 17th; D. I. Ancott, Aug. 18th; V. H. Lawrence, Aug. 19th, E. Brewerton, W. George, Aug. 21st; C. Stark, Aug. 22nd; W. A. Hammerton, Aug. 24th.

The following are granted temp. commns. as Sec. Lts. (A. and S.):—R. L. Cobham (Lt., Notts. Hus., T.F.), and to be Hon. Lt., July 8th; T. J. D. Reid (Lt., Lothian and Bord. Horse, T.F.), and to be Hon. Lt., July 24th; J. Malley-Martin, M.C. (Sec. Lt., Bord. R.), Aug. 9th; J. H. Jeffers (Lt., R.F.A., Spec. Res.), and to be Hon. Lt., Aug. 14th; F. H. Ryder (Lt., Brit. Columbia R., C.E.F.), and to be Hon. Lt., Aug. 17th; W. L. Goddard (Sec. Lt., Bord. R., Spec. Res.), Aug. 18th; A. MacAskill (Lt., Lond. R., T.F.), and to be Hon. Lt., A. C. Godfrey (temp. Sec. Lt., Middx. R.), J. A. Chaproniere (temp. Lt., Bord. R.), and to be Hon. Lt., A. M. Campbell (Lt., R.F.A., Spec. Res.), and to be Hon. Lt., Aug. 21st, E. A. H. Goodwin (Sec. Lt., Suss. R.), R. Leask (Sec. Lt., Highd. L.I., T.F.), Aug. 23rd; G. R. Leighton (Sec. Lt., Highd. L.I., T.F.), Aug. 24th; C. A. Thelenberg, Sept. 7th; J. A. Payne, Sept. 9th.

Prob. Flt. Officer W. T. Edmunds (late R.N.A.S.) is granted a temp commn as Sec. Lt. (K.B.), Aug. 15th.

Sec. Lt. T. Tarrant (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt. (Obsr. Officer), April 1st.

The following are granted temp. commns as Sec. Lts. (Obsr. Officers:—W. Wilkinson (temp. Sec. Lt., E. Yorks. R.), S. J. Charles (temp. Sec. Lt., S. Staff. R.), April 13th; G. Brown (Sec. Lt., York. R., T.F.), Aug. 23rd; H. B. Moicier (Sec. Lt., R. Ir. Rif.), Sept. 13th.

The following Prob. Obsr. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (Obsr. Officers):—G. C. Paish, E. M. Bell, C. F. Coates, S. King, P. J. Holmes, N. Gray, H. C. Mann, July 20th; L. Kemp, J. Gargan, A. Dewsbury, F. Pamment, V. F. Dorey, J. H. Spracklin, R. L. Richards, G. C. Fenton, Aug. 30th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers):—W. A. Bartlett, M. Goddard, S. R. Ham, H. Ingram, G. E. Jemmeson, A. D. Loughbrough, F. Morley-Dingle, R. B. Poole, J. W. Ravenscroft, F. Steel, J. W. Tallin, M. Thompson, H. E. Upton, C. A. Wright, W. H. Gladwell, B. Outram, J. Pate, H. B. M. Plater,

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A. Stephens, B. McL. Williams, E. Wilson, Aug. 30th; W. Ward, G. W. A. Kelly, W. Wilson, J. A. G. Smith, J. McRobb, A. E. Tough, A. R. Lamont, E. R. Driver, W. J. Diment, L. H. Eyres, A. G. Robertson, G. L. Bryars, A. H. Aitken, R. F. Hunter, R. Evans, R. L. Ford, Sept. 2nd; J. G. Nagle, B. A. Heeney, D. A. Cooney, H. M. D. Steagell, A. J. Aspinall, J. Durie, C. J. Clarke, R. H. Bruce, J. A. Senior, F. Towler, G. J. Holdcroft, Sept. 11th.

Lt. A. McL. MacElwee (Lt., A. and S. Highrs) is removed from the Air Force, May 19th.

Lt. K. A. S. G. N. Fearnside-Speed (Lt., A.S.C., S.R.) relinquishes his commn., July 28th.

Lt. E. R. Davis (Lt., Worc. R.) relinquishes his commn. on account of ill-health, Sept. 14th.

The following Lts. relinquish their commns. on account of ill-health contracted on active service, and are granted the hon. rank of Lt.:—J. L. H. Blackwood, E. H. Cross, Sept. 14th

Lt. O. R. Perkins resigns his commn., and is granted the hon. rank of Lt., Sept. 14th.

Lt. I. P. Graeb resigns his commn., Sept. 4th.

Lt. L. R. Lang resigns his commn., having been found permanently unfit for further instruction as Pilot or Observer, Sept. 14th.

The following Sec. Lts. resign their commns., having been found permanently unfit for further instruction as Pilots or Observers:—F. R. Bolton, C. T. Brown, O. C. Bucharan, J. W. Cotter, W. F. Eales, A. S. Greenwood, G. Harrison, R. A. Myers, W. R. Patton, T. Pearson, N. Saville, P. C. de St. F. de Mauremont, Sept. 14th.

The notification in "Gazette," June 21st, concerning Sec. Lt. (Hon. Lt.) E. G. Rumfitt, is cancelled.

The notification in "Gazette," June 7th, concerning Sec. Lt. E. H. Weatherall, is cancelled.

The notification in "Gazette," June 21st, concerning Sec. Lt. W. W. Gyles, is cancelled.

The notification in "Gazette," June 7th, concerning Sec. Lt. H. J. Greenwood, M.C., is cancelled.

The surname of temp. Capt. A. Lang is as now described and not Long as in "Gazette," Aug. 23rd.

ADMINISTRATIVE BRANCH.—The following are granted temp. commns. as Majs. and to be temp. Lt.-Cols. while empld. as Lt.-Cols.:—R. M. R. Lamb, D.S.O. (Maj., Northd. Fus.), April 1st; N. G. Darnell (temp. Maj., R. Innis. Fus.), June 17th.

L. F. W. Willson (temp. Maj., Glouc R.) is granted a temp. commn. as Maj., Aug. 20th.

Capt. P. J. Wiseman to be temp. Maj. while empld. as Maj., Aug 27th.

Capt. (temp. Maj.) T. Macleod retains his temp. rank while empld. as Maj. from (T.), Aug. 28th.

C. B. Belt (temp. Capt., R. Ir. Rif.) is granted a temp. commn. as Capt., June 1st.

D. N. Stewart-Saville, M.C. (Lt., Lancers) is granted a temp. commn. as Lt., and to be temp. Capt. while empld. as Capt., July 26th.

Lts. to be temp. Capts. while empld as Capts.:—(Hon. Capt.) J. McCowan, H. C. Williamson, May 30th; (Hon. Capt.) A. Ferris, June 1st; T. Mack, June 19th; W. Topham, June 28th; R. R. Shaw, July 23rd; M. M. Merriman, Aug. 14th.

Sec. Lt. A. E. le Sueur to be temp. Capt. while empld. as Capt., Aug 6th.

Sec. Lt. (Hon. Lt.) A. Duthrie to be temp. Capt. (without the pay and allowances of that rank), while empld. as Capt., June 28th.

Lt. (temp. Capt.) H. E. Tee relinquishes his temp. rank on ceasing to be empld. as Capt., Aug. 22nd.

The following are granted temp. commns. as Lts.:—F. C. Smith (Capt., R. Fus.), and to be Hon. Capt., May 24th; G. H. Tait (Lt., Cam. Highrs.), June 27th; S. Carrington (Lt., W. Rid. R.), June 10th; P. V. G. Van der Byl, M.C. (Capt., S.A. Inf), and to be Hon. Capt., July 13th; E. A. de Sain (temp. Lt., R.F.A.), July 19th; C. F. C. Turner (Lt., Middx R.), July 27th; M. L. Fitzgerald (Capt., Cen. Ont. R., C.E.F.), and to be Hon. Capt., Aug. 5th; A. S. Dark (Lt., R. Wel. Fus.), Aug. 12th; M. Tarbet (temp. Lt., Dorset R.), Aug. 13th; R. F. Leather (Lt., R.F.A.), Aug. 17th; E. G. Wood (temp. Lt. (Lpool. R.), Aug. 19th, H. P. G. Branston (Capt., N. and Derby R.), and to be Hon. Capt., Aug. 23rd; W. E. V. Richards (Lt., Som. L.I.), Aug. 24th, R. F. Cookson (Lt., R.M.A.), Aug. 26th; E. H. Maddick (Lt., W. Kent Yeo, T.F.), Sept. 2nd; G. W. Powell (Sub-Lt., R.N.V.R., R.N.D.), Sept. 3rd.

Sec. Lts. to be temp. Lts. while empld. as Lts.:—J. Robinson, July 26th; A. Barrett, J. S. Shipway, Aug. 19th; (Hon. Lt.) J. G. Beckham, Aug. 24th.

Lts. (A.) to be Lts.:—R. J. Montgomery-Moore April 1st; J. W. Kennedy, Sept 9th.

Lts. (O.) to be Lts:—G. W. Elderkin, W. Noble, D.F.C., Aug. 31st

The following are granted temp. commns. as Sec. Lts.:—E. G. Barnard, May 21st, A. Bragg, R. B. Cherry, H. J. Coles, J. A. Currie, V. W. G. Day, F. D. D. Glaussen, C. S. Hill, R. S. Lewis, H. T. Mackie, P. H. C. Martin, H. A. Smith, A. T. Welsh, H. B. S. Ballantyne, J. W. Heath, D. Lidderdale, S. Maunder, G. F. Mitchell, R. E. Sharples, L. H. Skelton, H. L. Vahey, E. R. Veneer, W. Wilcock, Sept. 1st; W. J. Collins, A. Gauld, A. Cleave (and to be Hon. Capt.), J. F. Alexander (and to be temp. Lt. while specially empld.), C. M. Tregurtha, K. C. H. Newman, J. A. McDonald, A. T. Guinevan, Sept. 9th.

Lt. A. T. A. Nesbitt relinquishes his commn. on account of ill-health contracted on active service, Sept. 14th.

Lt. L. H. Hansen, (Lt., Lond. Yeo.) relinquishes his commn. on account of ill-health contracted on active service, Sept 14th.

Sec. Lt. S. R. Swift relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., Sept. 14th.

Sec. Lt. W. E. Angell is dismissed the Service by sentence of a Gen. Court-martial, Sept. 14th.

The notification in "Gazette," Aug. 30th, concerning Sec. Lt. (temp. Lt.) J. M. Adams is cancelled.

TECHNICAL BRANCH.—R. W. Glennie, C.M.G. (Capt., R.N.), is granted a temp. commn. as Col., with effect from Aug. 15th, seny. April 1st.

Maj. (temp. Lt.-Col.) G. B. Stopford retains his temp. rank while empld. as Lt.-Col., from (A. and S.), May 30th

Lt.-Col. G. C. St. P. de Dombasle to be Lt.-Col., from (A. and S.), July 11th.

Lt.-Col. R. H. Collier, D.S.O., to be Lt.-Col from (S.O.), Aug. 27th.

Maj. W. E. Jones to be temp. Lt.-Col. while empld as Lt.-Col., from (S.O.), Aug. 24th.

C. P. Hearle (Lt.-Comdr., R.N.) is granted a temp. commn. as Maj., with effect from Aug. 15th, seny., April 1st.

A. E. Gendle (temp. Lt.-Comdr. R.N.V.R.) is granted a temp. commn. as Maj., with effect from Aug. 15th, seny. April 1st.

Capt. D. R. Verey to be temp. Maj. while empld. as Maj, May 27th.

Capt. M. D. Bousfield to be Capt., from (Ad.), April 1st.

The following temp. Lts. (R.N.V.R.) are granted temp. commns. as Capts., with effect from Aug. 15th, seny. April 1st:—H. G. Harris, T. R. Garrigan, M. T. Spence, J. Crichton, A. N. Pennel, G. I. H. Douglas-Lane, W. Gillon, R. M. R. Mackenzie, W. B. Daniels, C. R. Lynn, G. W. Jones, P. A. Smee, W. A. Ogden, A. D. Macdonald.

A. J. Prince-Cox (temp. Lt., R.N.V.R.) is granted a temp. commn. as Lt., and to be temp. Capt., with effect from Aug. 15th, seny. as Lt., R.A.F., April 1st, and seny. as temp. Capt., April 17th.

H. F. Jackson (temp. Lt., R.N.V.R.) is granted a temp. commn. as Lt., and to be temp. Capt., with effect from Aug. 15th, seny. as Lt., R.A.F., April 1st, and seny. as temp Capt., May 27th.

Lts. to be temp. Capts. while empld as Capts.:—(Hon. Capt.) C. A. Hudson, June 20th; O. M. D. Bell, Aug. 25th.

Sec. Lt. (temp. Lt.) W. E. Townsend to be temp. Capt. while empld. as Capt., June 19th.

E. W. Barlow (temp. Lt., R.N.V.R.) is granted a temp. commn. as Lt., and to be temp. Capt., with effect from Aug. 15th, seny. as Lt., R.A.F., April 1st, and seny. as temp. Capt., Aug. 1st.

The following temp Sub-Lts. (R.N.V.R.) are granted temp. commns. as Lts., with effect from Aug. 15th and with seny. from April 1st:—A. G. Maddock, J. Logie, G. Harris, J. H. Grills, P. T. Creswell, A. W. Isherwood, T. D. F. Scott, T. Lightbody, R. Stewart, S. H. Thomas, E. O. Jones.

The following temp. Sub-Lts. (R.N.V.R.) are granted temp. commns. as Lts., with effect from Aug. 15th and with seny. from April 9th:—C. W. Dick, F. C. Wood.

A. Stocks (temp. Sub-Lt., R.N.V.R.) is granted a temp. commn. as Lt., with effect from Aug. 15th and with seny. from April 18th.

H. A. Gillman (temp. Sub-Lt., R.N.V.R.) is granted a temp. commn. as Lt., with effect from Aug. 15th and with seny. from April 23rd.

The following temp. Sub-Lts. (R.N.V.R.) are granted temp. commns. as Lts., with effect from Aug. 15th and with seny. from May 30th:—E. J. Goodfellow, G. C. Rawlins.

A. Waters (temp. Sub-Lt., R.N.V.R.) is granted a temp. commn. as Lt., with effect from Aug 15th and with seny. from June 7th.

J. Pryce-Jones (temp. Sub-Lt., R.N.V.R.) is granted a temp. commn. as Lt., with effect from Aug 15th and with seniority from June 19th.

D. N. Stewart (temp. Sub-Lt., R.N.V.R.) is granted temp. commn. as Lt., with effect from Aug 15th and with seny. from June 28th.

L. J. Clements (temp. Midshipman, R.N.V.S.) is granted a temp. commn. as Sec. Lt., with effect from Aug 15th and with seniority from April 9th.

A. M. Davies (temp. Midshipman, R.N.V.R.) is granted a temp. commn. as Sec. Lt., with effect from Aug. 15th and with seniority from June 20th.

The following are granted temp. commns. as Lts.:—C. Brown (Lt., W. Yorks R.), June 6th; J. H. S. A. Skinner (Lt., Gord. Highrs.), Aug. 12th.

Sec. Lts. to be temp. Lts. whilst empld. as Lts.:—R. C. Brown, May 30th; D. J. Parry, Aug. 29th.

Lts. (A.) to be Lts.:—H. Monks, M.M., July 30th; (Hon. Capt.) C. Tollemache, Sept. 9th, and to be Hon. Capt.

Lts. (A. and S.) to be Lts.:—R. Tyzack, May 5th; J. E. S. Alexander, Aug. 24th; (Hon. Capt.) W. C. Parker, Sept 2nd, and to be Hon. Capt.

Lt. (Hon Capt.) G. R. G. Topham to be Lt. (Hon. Capt.), from (K.B.), Aug. 28th; Lt. A. A. D. Toplis to bt Lt., from (O.), June 13th

The following are granted temp. commns. as Sec. Lts.:—O. C. Lees (and to be temp. Lt. whilst specially empld.); J. Wilson (and to be temp. Lt. whilst specially empld.); O. W. Penny; W. R. Bernard (late Comdr., R.N., Regt., and to be Hon. Maj.), Sept. 9th.

Sec. Lt. R. B. D. Malden relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., Sept. 14th.

The notification in "Gazette" Aug. 16th, concerning Sec. Lt. R. P. Coulter, is cancelled

The notification in "Gazette" Sept. 3rd, concerning Sec. Lt. W. L. Whitelaw, is cancelled.

MEDICAL BRANCH.—DENTAL.—D. Campbell is granted a temp. commn. as Sec. Lt., Sept. 11th.

MEMORANDA.—Capt. L. H. Jefferson relinquishes his commn. on ceasing to be empld., Sept. 5th.

Sec. Lt. J. P. Smith to take rank and precedence as if his appt. as Sec. Lt. bore the date June 1st.

The rank of Capt. H. Spink is as now described, and not as in "Gazette" Sept. 3rd.

ADMIRALTY, Sept. 14th.

Honours for services in action with the "Goeben" and "Breslau" in January, 1918.

The King has been graciously pleased to approve of the award of the following honours, decorations and medals to the undermentioned Officers and Men in recognition of their services on the occasion of the sortie of the "Goeben" and "Breslau" from the Dardanelles on January 20th, 1918.

TO BE COMPANIONS OF THE DISTINGUISHED SERVICE ORDER.

Flt. Comdr. RALPH SQUIRE SORLEY, R.N.A.S. (now temp Capt. R.A.F.).
For the determined and successful bombing attacks on the "Breslau" and "Goeben" on January 20th, 1918, and subsequent days, both by day and by night.

Flt. Lt. HARRY VERNON WORRALL, R.N.A.S. (now Hon. Capt., R.A.F.).
Made a successful attack on the "Goeben," obtaining a direct hit, although this was his first night flight.

Flt. Sub-Lt. ROBERT WITHY PEEL, R.N.A.S. (now Lt., R.A.F.).
Carried out a determined and courageous bombing attack on the "Goeben" in the face of attacks from a vastly superior enemy air force.

Obsr. Sub-Lt. FREDERICK CHARLES SMITH, R.N.A.S. (now Lt., R.A.F.
Acted as observer for Flt. Comdr. Sorley during a determined and successful bombing attack on the 'Breslau" on January 20th, 1918, and also during subsequent day and night attacks on the "Goeben."

The following Officers and Men have been mentioned in despatches:—

Flt. Comdr. LIONEL ARTHUR HERVEY, R.N.A.S. (now temp. Capt., R.A.F.).

Capt. WILLIAM ROBERT MCBAIN, M.C., R.F.C.

Flt. Sub-Lt. SAMUEL PORTER COLT, R.N.A.S. (now Lt., R.A.F.).

Sec. Lt. ALEXANDER DALGETY FERGUSON, Highland L.I., attd. R.F.C.

HONOURS FOR MISCELLANEOUS SERVICES.

The King has been graciously pleased to approve of the award of the following honour, decorations, and medal to the undermentioned officers and men:—

TO RECEIVE THE DISTINGUISHED SERVICE CROSS.

Flt. Sub-Lt. THOMAS HINSHELWOOD, R.N.A.S. (now Capt., R.A.F.).
For general good work and successful long reconnaissances under fire when serving with the Expeditionary Force in German South-West Africa in 1914. Exhibited courage and resource, when compelled to make a forced landing, whilst endeavouring to re-establish touch with the right advance on Olavifontein.

TO RECEIVE THE DISTINGUISHED SERVICE MEDAL.

C.P.O., 3rd Grade, ALFRED JOHN HUMPHRIES, O.N. F.547 (now R.A.F.).

(*Continued on page 1059.*)

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TWO NEW GERMAN MACHINES.

I.—THE TWO-SEATER RUMPLER BIPLANE (G.117.)

(260 h.p. Mercedes Engine.)

This machine, which was used by the enemy at the commencement of the year, is of the C.V. type, but differs only in detail from the earlier C.IV. type.

The general shape and disposition of the wings is maintained, including the characteristic sweep-back of the main planes, and the fitting of ailerons to the upper planes only. Some important particulars follow :—

Weight empty (but with water)...	2439 lbs.
Weight, fully loaded	3439 lbs.
Total military load	545 lbs.
Area of upper wings (with ailerons)	217.6 sq. ft.
Area of lower wings	146 sq. ft.
Total area of main planes ...	363.6 sq. ft.
Loading per sq. ft. of wing surface	9.5 lbs.
Area of tail plane	22 sq. ft.
Area of fin	4 sq. ft.
Area of elevators	20.8 sq. ft.
Area of rudder	6 sq. ft.
Total weight per h.p.	13.2 lbs.
Petrol capacity	59 gallons.
Oil capacity	3 gallons.
Water capacity	10 gallons.
Endurance	About 4 hours.

PERFORMANCE.

	ft.	m.p.h.	revs.
Speed at	10,000	100.5	1510
Speed at	15,000	87	1360

	ft.	m. s.	Rate of climb in ft. per min.	revs.
Climb to ...	10,000	16 0	400	1375
Climb to ...	15,000			

Service ceiling, 15,500 ft. (estimated).
Estimated absolute ceiling, 17,500 ft.
Greatest height reached, 15,300 ft. in 38 min. 25 secs. Rate of climb at this height is 125 ft. per min.

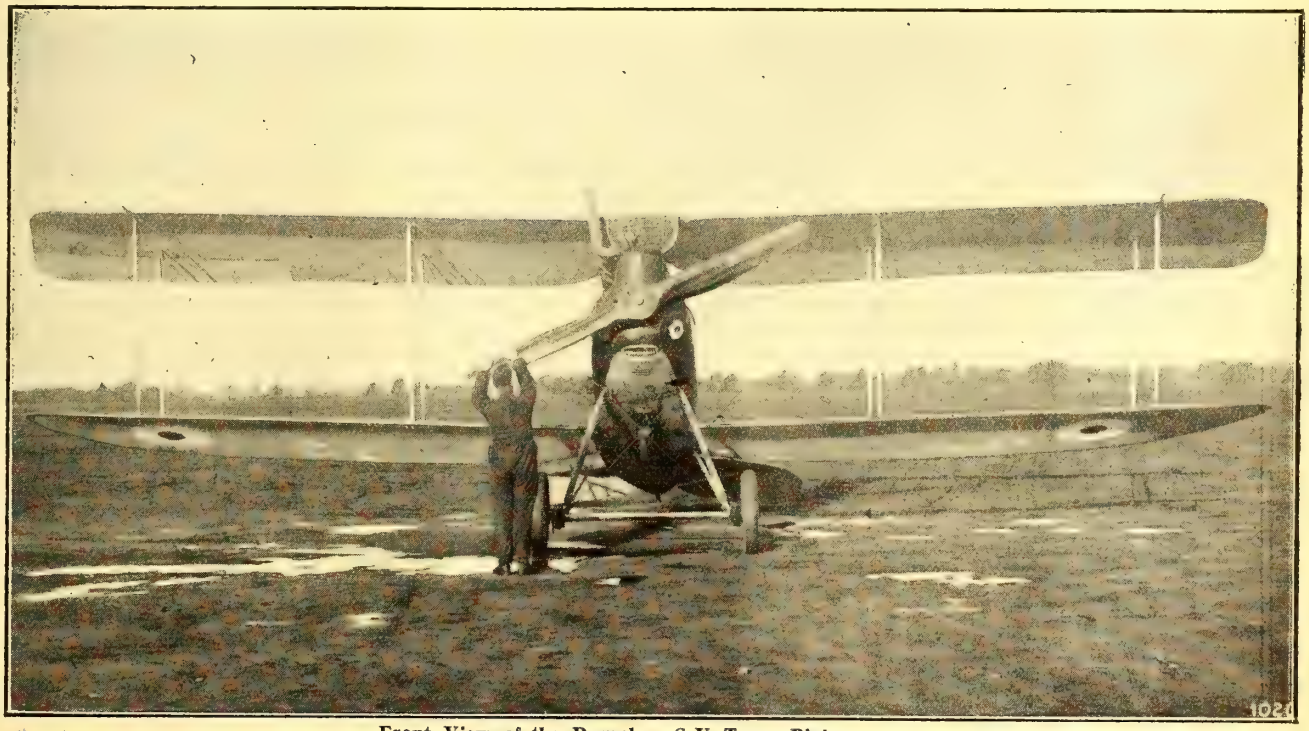
CONTROL.

Longitudinal (elevators), good.
Lateral (ailerons), very heavy and very ineffective.
Directional (rudder), moderately light and quite effective.

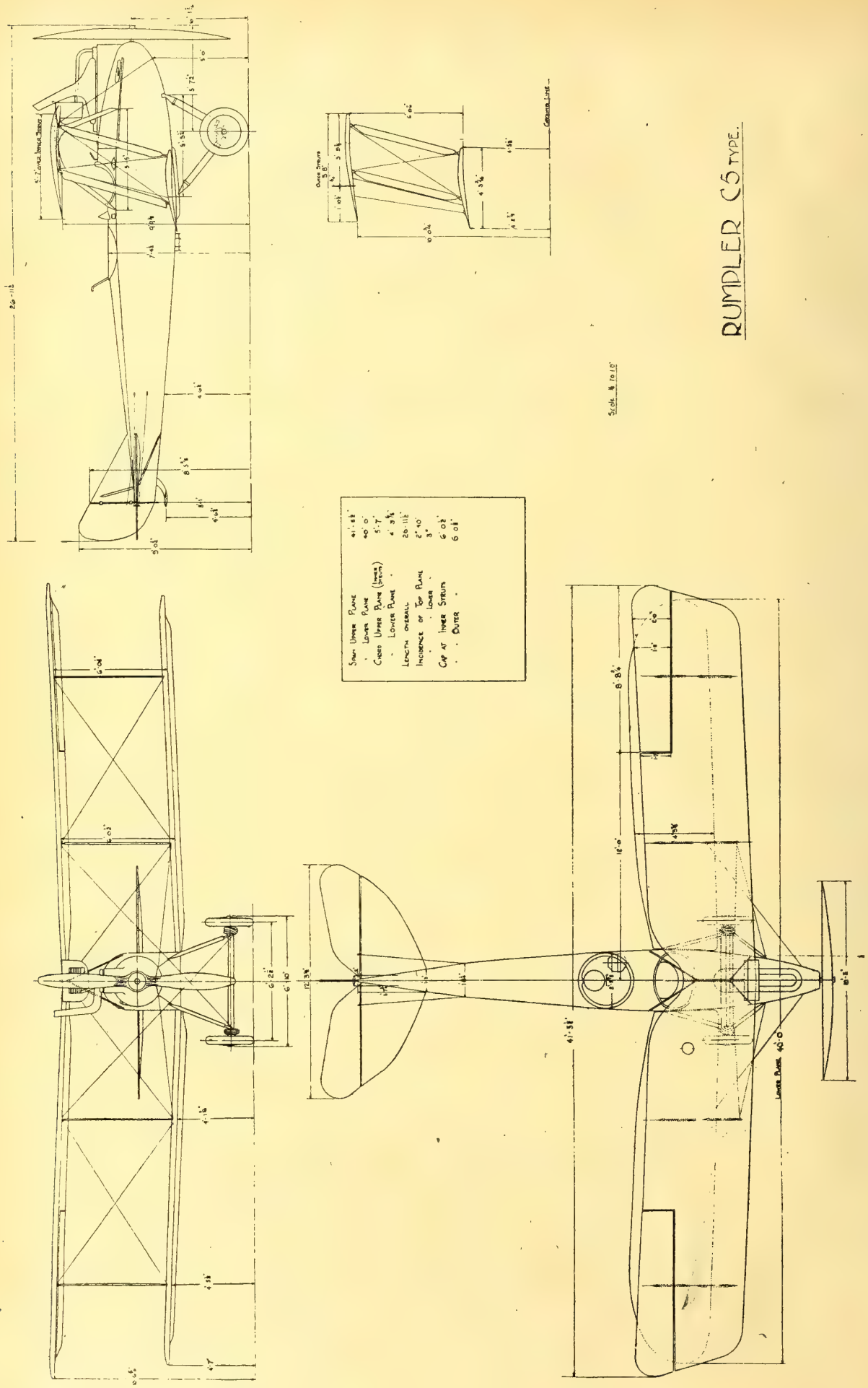
It is reported that the machine is tiring to fly owing to the very poor lateral control; that it is nose-heavy, and rather liable to get into a spin.

WINGS.

The upper wings have a maximum span of 41 ft. 6 ins., and



Front View of the Rumpler, C.V Type, Biplane.


RUMPLER C5 TYPE.
Scale ⅛ to 1'
Span Upper Plane 41'-8½"
" Lower Plane 40'-0"
Chord Upper Plane (Inner) 5'-7"
" " (Outer) 4'-3⅝"
" Lower Plane 4'-3⅝"
Length overall 26'-11½"
Incidence of Top Plane 2° 40'
" " Lower " 3°
Gap at Inner Struts 6'-0½"
" " Outer 6'-0"

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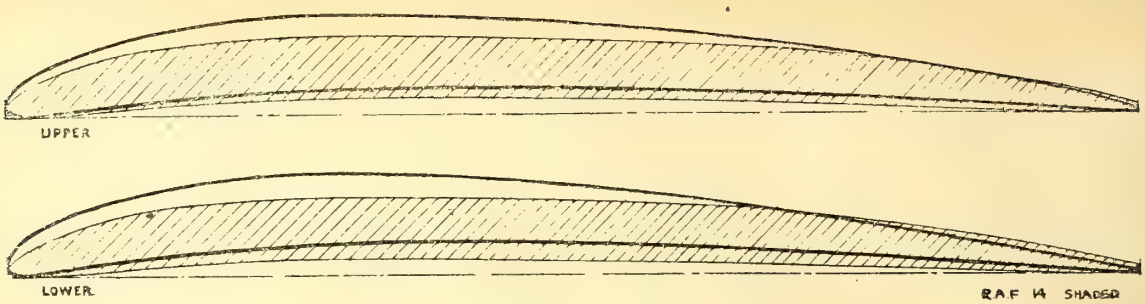
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SECTION OF AEROFOIL – RUMPLER C.V.
R.A.F. 14 SECTION SUPERIMPOSED.

Fig. 1.

chord of 5 ft. 8 ins. The span of the lower wings is 40 ft., and the chord is 4 ft. 4 ins.

The wings are swept back through an angle of 3 deg., and are set at 2½ deg. dihedral angle. The wing sections of upper and lower planes are given in Fig. 1. Both front and rear spars are of spruce, and are constructed in two halves, which are grooved and tongued, and then glued together. This is clearly indicated in Fig. 2. The ribs are built up of plywood and strips in the usual manner, and are of good workmanship. Short ribs join the front spar to the leading edge, alternately with the true ribs.

The wing construction appears adequately strong. Steel compression tubes are placed between the spars, and are braced by ties varying from piano wire at the wing tips to cable and swaged rod at the inner end. The trailing edge consists of a flattened steel tube, to which the ribs are attached by copper rivets.

Ailerons are fitted to the upper wing only, which may in some measure account for that ineffectiveness of lateral control which is characteristic of nearly all German aeroplanes. The area of each aileron is 15.3 sq. ft.

The methods of attaching the main planes to the upper cabane and to the fuselage are designed to assist rapidity of assembly and disassembly, and are of considerable interest. They do not differ from the arrangement on C.IV machines, and may be considered, therefore, to have been found satisfactory in practice. From the Fig. 3 it will be seen that the upper wings are locked by means of a guillotine lever, held in position by a pin passing through both levers and through two holes arranged in the centre section. The lower wings are locked in position by even simpler means (Fig. 4), requiring no moving parts. The ball at the end of the spar is simply introduced into the socket fixed to the fuselage, and the wing tip is kept lowered. When the tip is raised, the top portion of the wing attachment slips into position, thus locking the wing in such a manner that, even before the attachment of struts and bracing, movement is possible in only one way—i.e., by the dropping of the wing tip. A label bearing instructions and an explanatory diagram referring to these lower wing attachments is affixed on either side of the fuselage, near to the socket concerned.

Struts.

These are of circular section steel tube, encased in a wood fairing. A typical Rumpler strut attachment is shown in Fig. 5. The twin sockets are held down by two bolts, which pass right through the spars. The heads of these bolts are clearly shown.

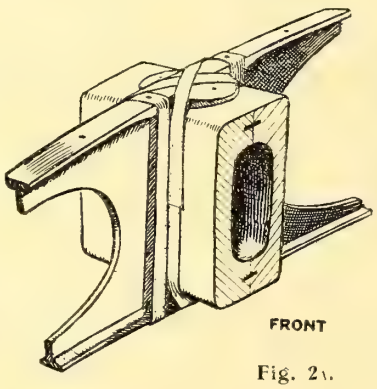


Fig. 2A.

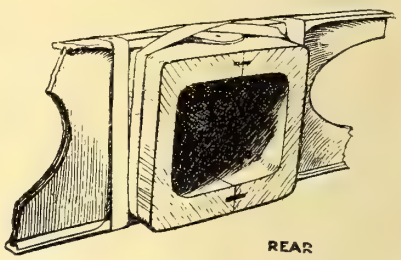


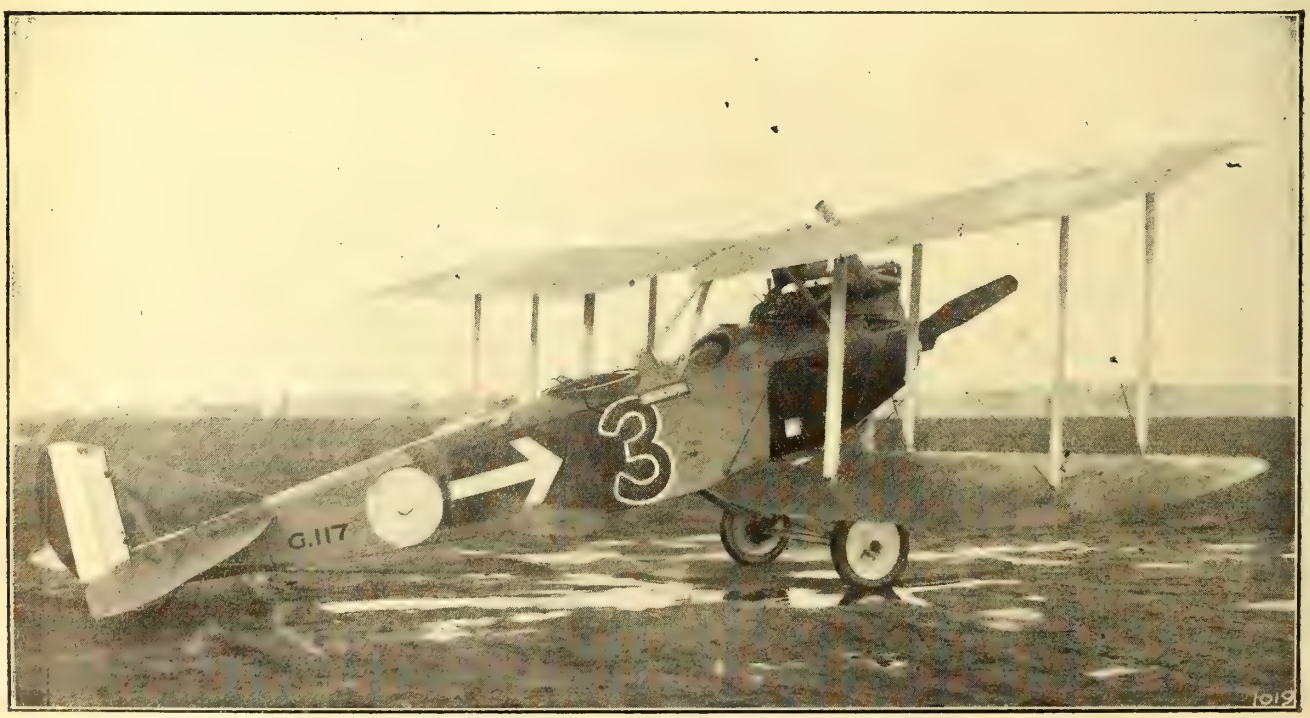
Fig. 2.

The construction of the welded-up centre section cabane may be gathered from the photographs and from Fig. 6.

A cylindrical well of 3-ply and aluminium is incorporated in the lower wing close to the fuselage on the left side to accommodate the compass, which is thus convenient to the pilot's sight. Fig. 7 shows the construction of this well.

Fuselage.

The fuselage is a compromise between the several rival methods

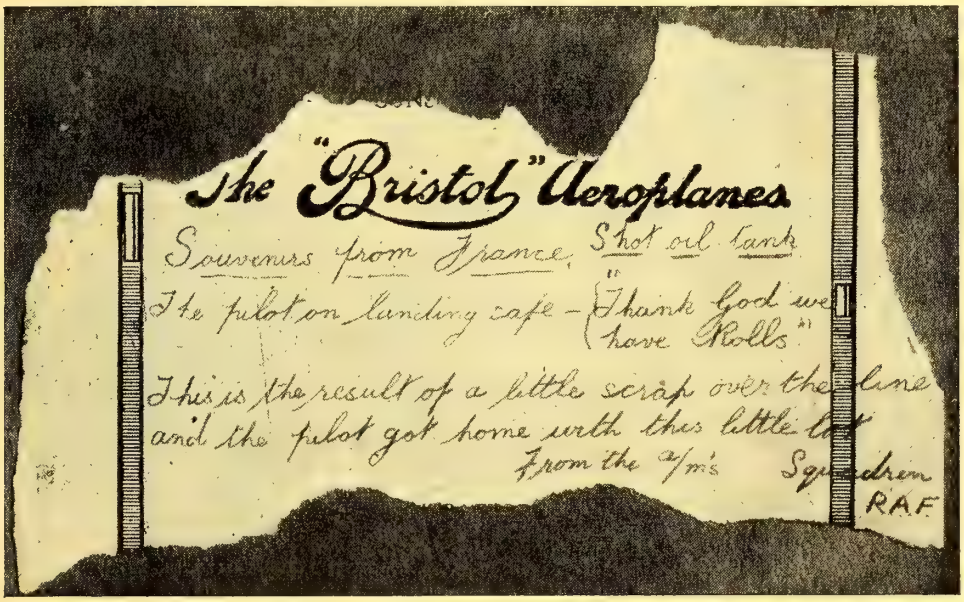


Three-quarter Rear View of the Rumpler (C.V. Type).

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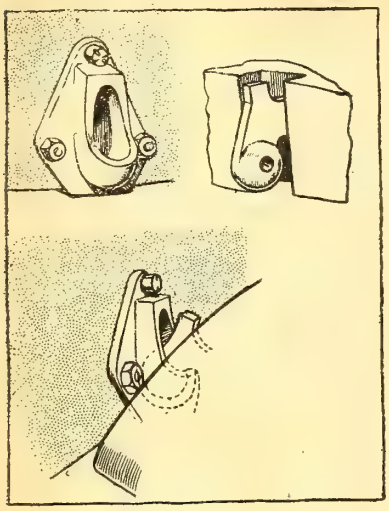


Fig. 3.

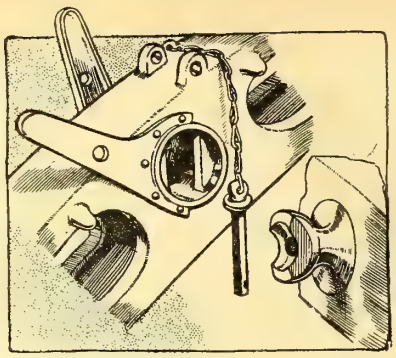


Fig. 4.

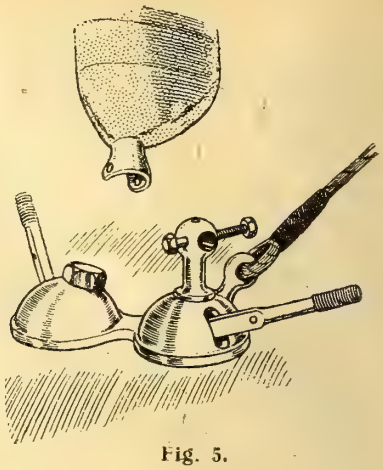


Fig. 5.

of construction. Wooden longerons and struts, braced with piano wire; steel tubes, and 3-ply are all used in varying degrees.

A braced girder of longerons and cross struts constitues the principal factor, and this construction is depended upon entirely in the rear of the observer's cockpit. Towards the tail, for a distance of about 6 ft. from the sternpost, the covering is of 3-ply, which thoroughly stiffens up the fuselage where the stresses due to the tailplanes may be most severely felt. The middle portion of the fuselage sides—i.e., between the 3-ply at the rear and the pilot's seat, has fabric covering, while forward of this 3-ply is again used.

The slightly arched top fairing is entirely of 3-ply, except for the aluminium cowl, which extends to the rear of the gunner's cockpit, as also is the bottom of the fuselage. The engine cowls

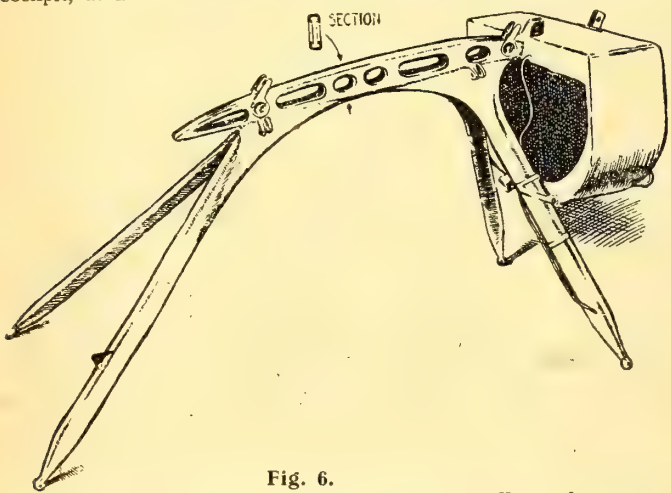


Fig. 6.

are of aluminium, held in place by turnbuttons. From the rear of the observer's cockpit to the front of the pilot's seat the wood construction is reinforced by steel tubes, which have forked ends, and are bolted together.

The pilot's cockpit is particularly roomy and comfortably fitted. The gunner is provided with a seat of the piano-stool type with a rotatable head. This head is fixed on its shaft eccentrically, as may be seen by Fig. 8.

Landing Gear.

The undercarriage, of the usual vee type, while presenting few noteworthy features, is of workmanlike design and construction.

Both front and rear limbs are of stream-line section steel tubing. The upper extremities are placed well apart. At the lower extremities the tubes are welded together to form, together with the sheet steel axle fairing, the slot to accommodate axle travel. (See Fig. 9.) The front limb, which is of smaller section than the rear tube, is additionally faired with wood, while the rear limb is naked. The wood fairing has obviously been fitted as an after-thought, and not by the manufacturer. The job is clumsy and without finish, though effective. Landing shocks are taken by the familiar steel coil spring.

Four bracing wires are employed, connecting all four upper attachment points to the apices of the vees. Fig. 10 shows one of the front joints.

Tail.

The tail is practically of standard Rumpler—and, indeed, German—practice, but it is noteworthy that the elevators, which were of the balanced pattern in the C.IV. machine, are no longer so. As the longitudinal control is reported entirely satisfactory, it is evident that unbalanced elevators have been found all that

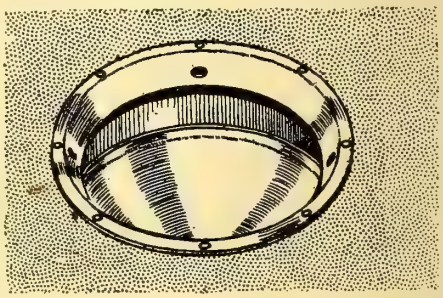


Fig. 7.

is desired. The fin may hardly be regarded as adequate, in view of the side area presented in the nose of the machine, and the report that this aeroplane is somewhat liable to spin should be considered in this connection.

The four tail stays are of stream-line steel tube, and the lower pair have serrated edges to assist mechanics in remembering that these stays should not be grasped in lifting the machine or in holding it back on starting.

Although the fabric has not been removed, these members—the fin, rudder, and elevators—appear to be constructed of light steel tube welded in the usual way.

The tail skid is of ash, pivoted in the centre, and sprung at its upper end. The lower end carries a sheet steel shoe, whose shape is shown in Fig. 11.

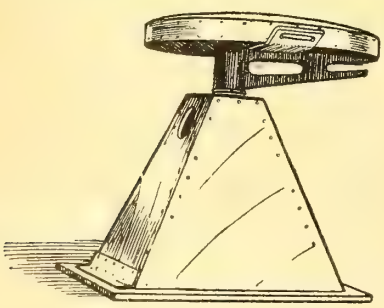


Fig. 8.

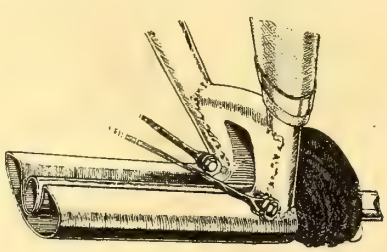


Fig 9.

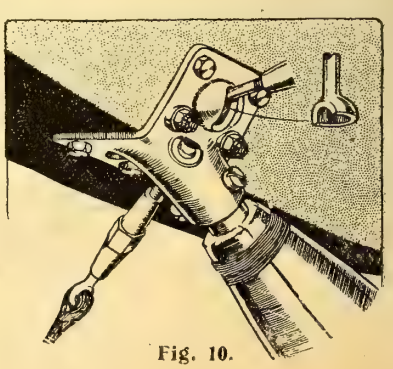
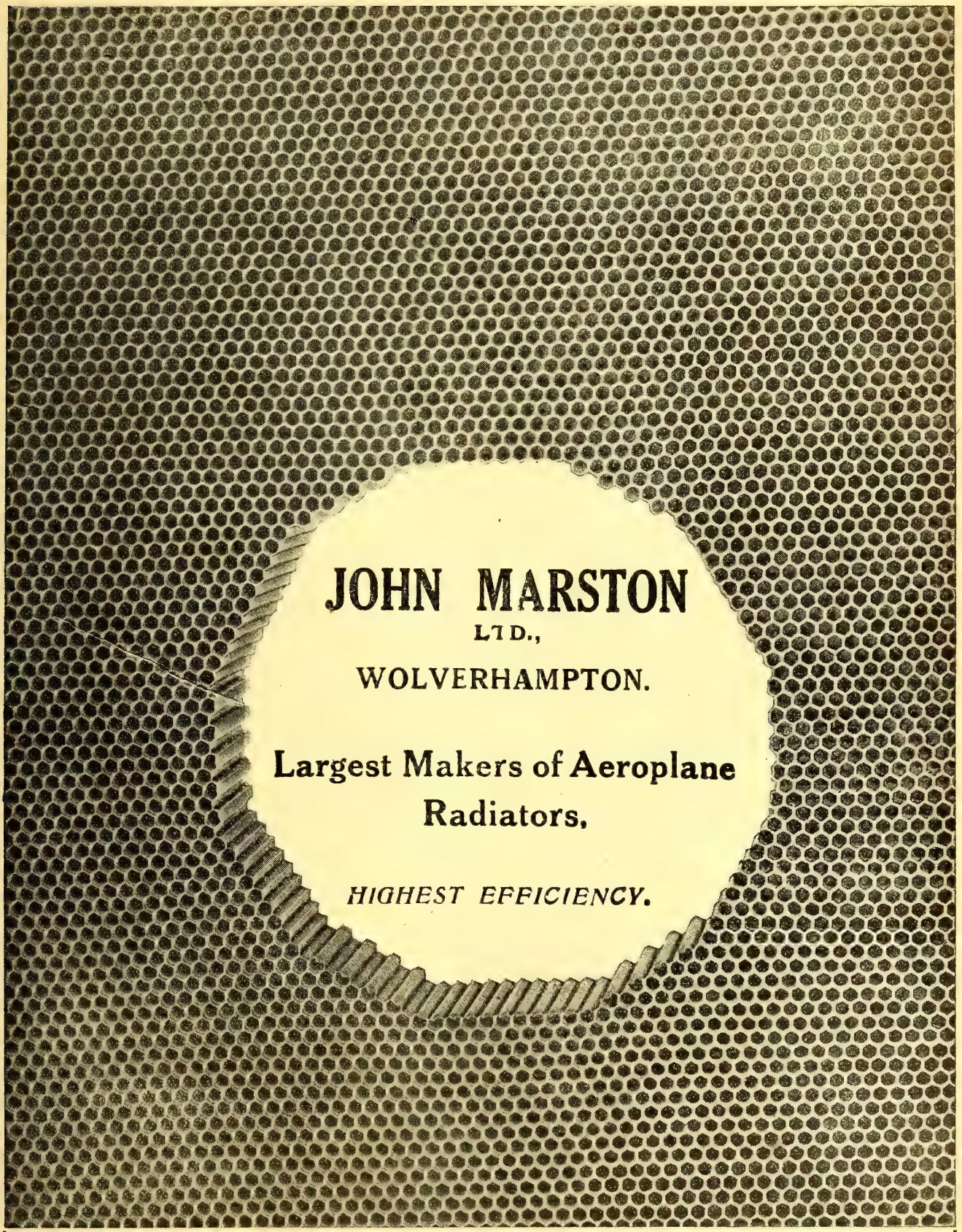
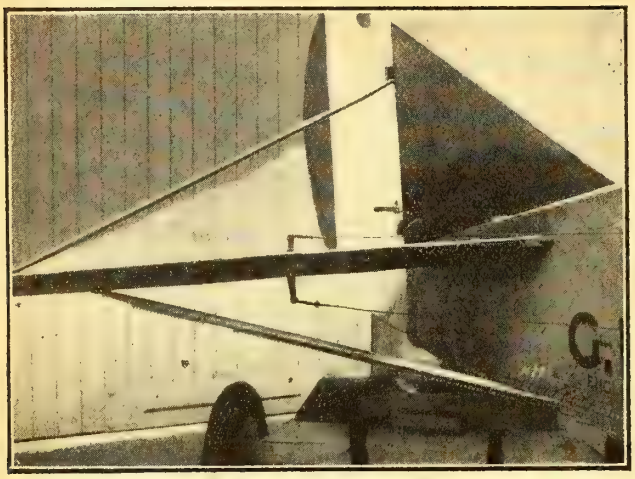


Fig. 10.



AIR BOARD STANDARD TUBE BLOCK.



Tail and Fin Bracing of the Rumpler. Note the saw-teeth on the low tail stay tube to prevent mechanics from lifting the machine by this tube.

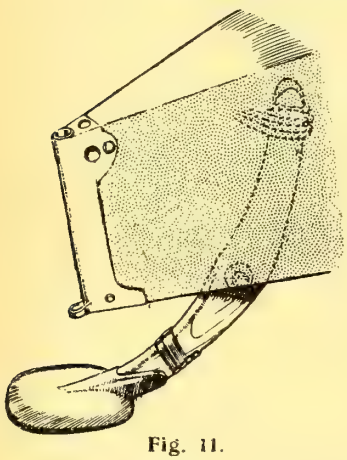


Fig. 11.

CONTROLS

The control system is of considerable interest, inasmuch as the usual transverse rocking shaft operating the elevator controls is not used. The aileron control is actuated by a longitudinal rocking shaft of steel tube, which carries a welded cone-shaped portion supporting the vertical control lever. The aileron cables are attached to a lever pinned to the rocking shaft, and pass through the wings, operating the ailerons in the way that has become usual in German aeroplanes—i.e., the aileron lever lies in line with the plane, and is accommodated in a slot cut in the rear edge of the main plane.

The control cables pass over pulleys when they leave the lower plane to be attached to the aileron lever. These pulleys are situated behind the rear outer strut attachment, and are capped with a neat aluminium fairing.

The control lever operates the cables attached to the elevator levers, those attached to the lower extremities of the levers passing

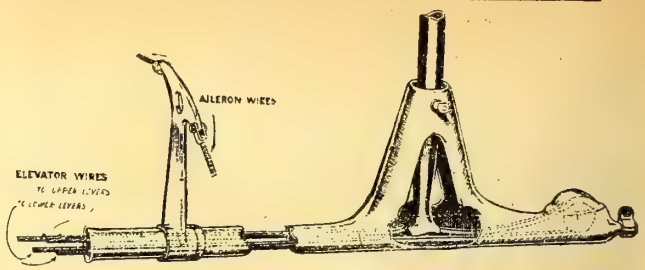


Fig. 12.

over pulleys mounted in the front portion of the rocking shaft. This shaft projects somewhat below the level of the fuselage bottom, and is neatly faired off by an aluminium shield screwed to the fuselage. The control system should be made clear by Fig. 12.

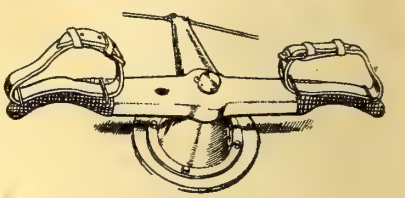


Fig. 13.

A welded sheet steel rubber bar of simple pattern, shown in Fig. 13, operates the rudder through the usual cables. The distance between the seat and rudder bar is not variable. Rubber sleeves and leather straps on either extremity guard against the possibility of the pilot's feet slipping.

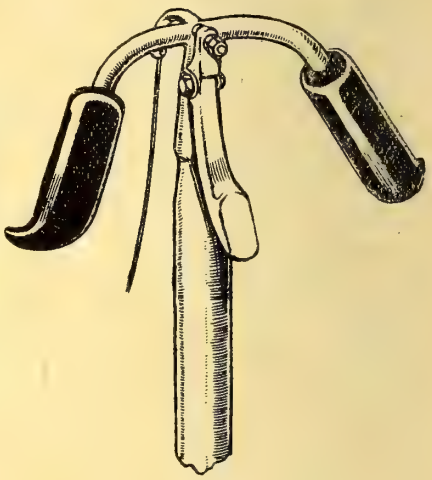
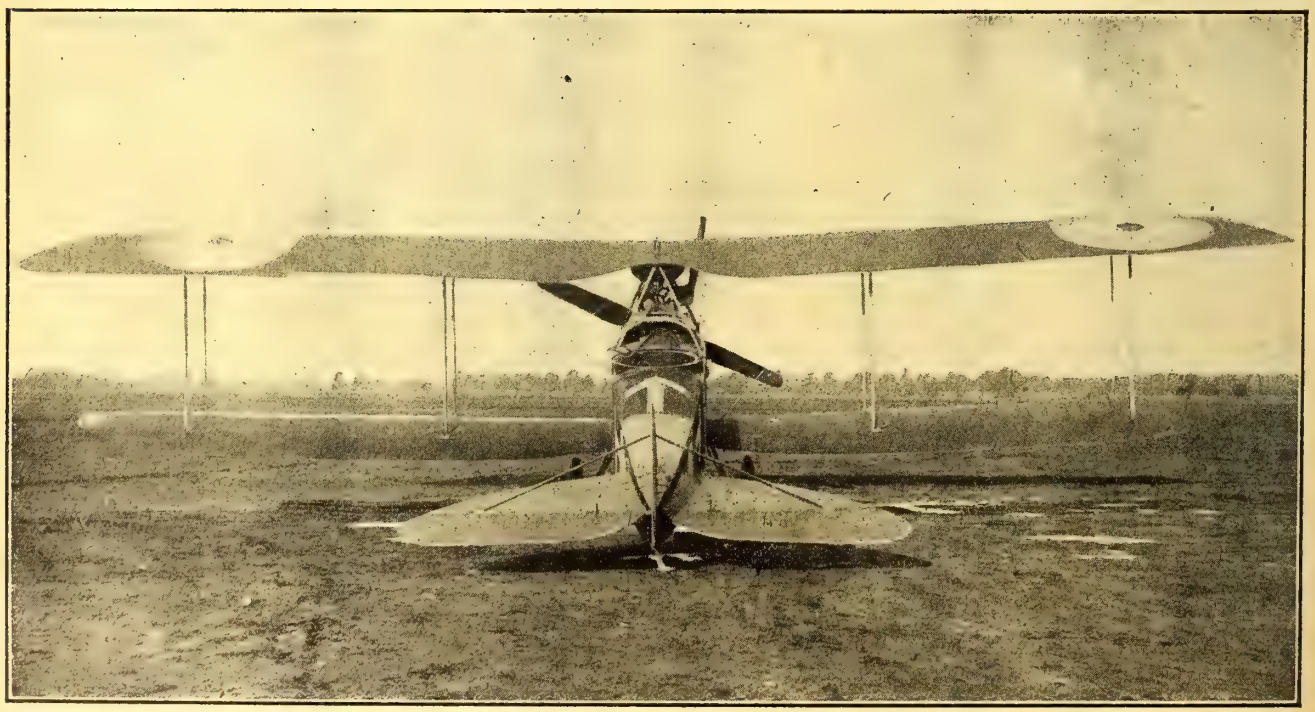


Fig. 14.

ARMAMENT.

The pilot controls the fire of one fixed Spandau gun attached close to starboard side of the engine. The cocking lever is placed just outside the cockpit to the pilot's right. The gun itself is inaccessible during flight. A thumb lever shown in sketch (14) controls the fire through the usual clutch and synchronising gear.

The observer's gun is of the Parabellum type, and is mounted on the usual built-up wooden gun-ring of the same kind as that found on most German machines.



Rear View of the C.V Type Rumpler.



Confidence

UP in the night sky, with the pencils of light around him, searching the darkness, the airman looks keenly ahead through the clear glass of his goggles.
Before him, his wind-shield takes the sharp edge from the cutting, cold air. His alertness and confidence depend much on the little things—his confidence in his goggles and wind-shield are unshakable because—well, just because they are **Triplex Safety Glass**—absolutely unsplinterable and giving 100 per cent. clear visibility.

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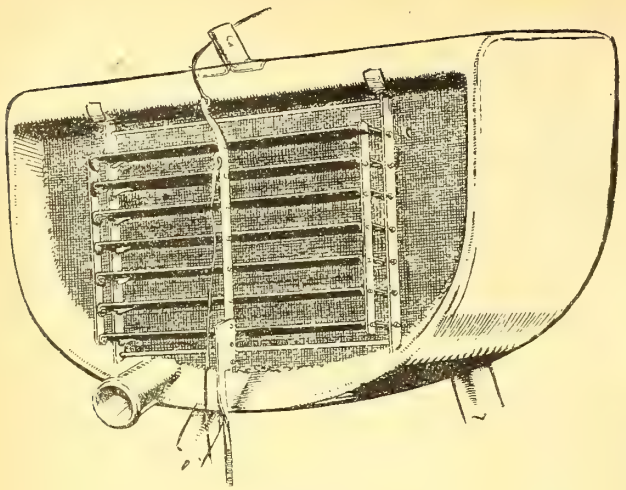


Fig. 15.

Provision for the fitting of a bomb rack had been made, but none was fitted.

An aluminium tray with holes for 10 Verey lights was fixed to the fuselage.

Engine.

The Rumpler is usually fitted with a 240 h.p. Maybach engine or a 260 h.p. Mercédès. The present example has 6 cylinder Mercédès of 260 h.p., which possesses the familiar combined throttle and altitude control. The exhaust gases are led into a welded manifold, the shape of which is indicated in the photograph.

Cooling System.

The radiator, made by Hans Windhoff, is slung over the rear portion of the engine, and fixed to the central cabane. The honeycomb consists of circular brass tubes, expanded at their extremities into hexagons, and sweated together there. The total radiating surface is approximately 1.5 sq. ft. The shutters

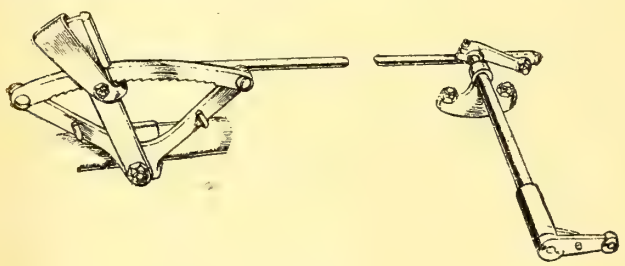


Fig. 16.

which regulate the cooling surface are shown in Fig. 15. They are operated by cables passing over pulleys. One cable passes over the top of the radiator, while the other exerts a downward pull and passes underneath. German pilots have reported that these shutters are rarely required except during protracted descents.

The temperature of the water is indicated by a mercury thermometer easily visible from the pilot's seat, and the limits of the permissible range of temperature are defined by red marks—one at 60 deg. and the other at 85 deg. The radiator may be considered thoroughly satisfactory, but must naturally obstruct the pilot's view to some extent.

The oil tank is situated at the port side of the engine, and the maintenance of an equable temperature of its contents is assisted by a thick covering of felt. The oil pump is embedded in the bottom of the crankcase, and not only passes on the oil to the gudgeon pins and crankshaft, but at the same time mixes, at each pulsation, a certain quantity of fresh oil from the tank with the oil already in circulation.

Petrol System.

The main petrol tank—of 46 gallons capacity—serves as a support for the pilot's seat, while an auxiliary tank holding 13 gallons is fitted between the two cockpits, adapting itself to the shape of the fuselage top fairing and to the gunner's turret. Neither tank seems to posses baffle plates, and both work under pressure



Engine Emplacement in the C.V Rumpler.

The initial pressure is obtained by means of hand-pumps, of which there is one in each of the cockpits. An automatic air pressure pump driven off the crankshaft maintains the pressure, and a release valve incorporated in the pump regulates it. Each tank has its own pressure gauge on the dashboard. The petrol gauge on the main tank is of Laufer make, while a Maximall gauge is found on the auxiliary tank. All pipes on this machine are of copper, and the tanks of sheet brass.

Engine Controls.

Three 3-way cocks are fitted. They enable the pilot to shut off the petrol entirely; to supply from both tanks simultaneously, or to run on either of the tanks alone.

The throttle controls are shown in Fig. 16. The placing of the Mercédès carburettor at the rear of the engine facilitates the direct nature of the control.

The Deuta tachometer, working on the centrifugal principle, is driven off the camshaft, and is graduated from 0 to 1,600 r.p.m. It is not illuminated, and no normal is marked.

Propeller.

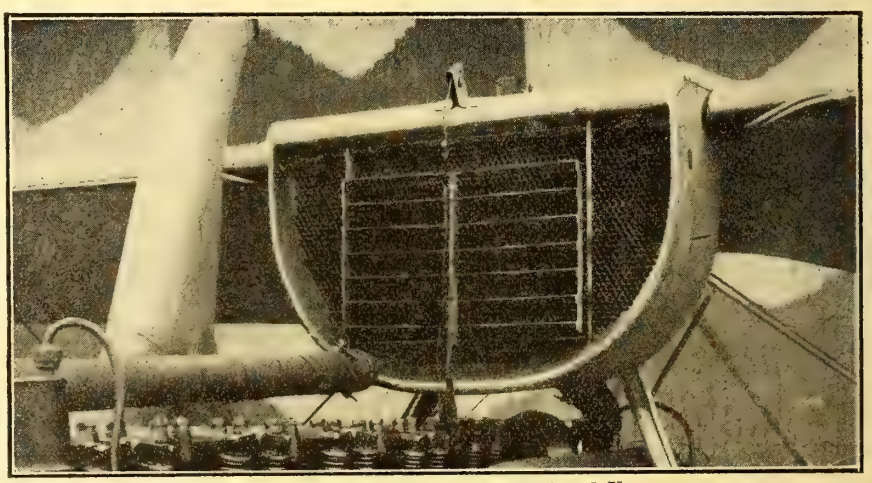
The propeller is an "Axial," No. 6987, diameter 3,150 mm., pitch 1,830 mm. It is secured to the crankshaft by eight bolts, an extra pair being fitted between two of the pairs of the usual six.

Wireless.

The machine is internally wired, and a tapping key is fitted to the gunner's right hand. The rack intended to support the aerial reel is also to be found, as well as a sheet steel dynamo shelf near the engine.

Cameras.

Two types of cameras were fitted. One particularly large one was accommodated in the special fitting shown in Fig. 17. The



Radiator and Shutter of the Rumpler C.V.

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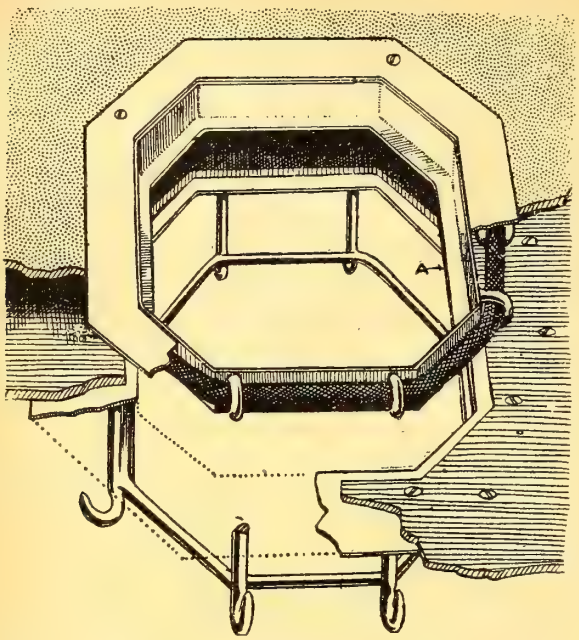


Fig. 17.

light octagonal tray A is suspended from the floor boards by elastic shock absorbers.

The zinc well shown in Fig 18 carried the second camera. A light plywood tube, 30 ins. long and 5 ins. wide, is fixed to the rear of the observer's seat. It is obviously intended to carry some object, probably a Goerz bombing sight.

This machine is now at the Enemy Aircraft View Room, Agricultural Hall, Islington, where it may be seen on production of a pass, obtainable from The Controller, Technical Dept., Ap.D.(L), Pen Corner House, Kingsway, W.C.2.

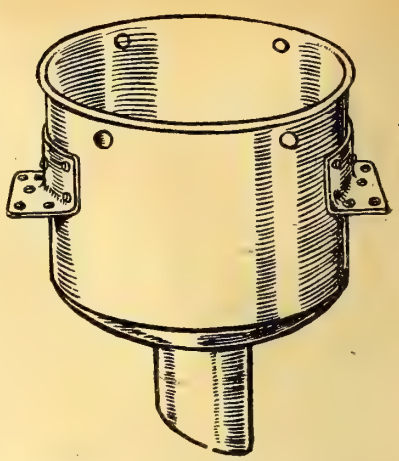


Fig. 18.

G. T. C.,
Ap.D.(L).

J. G. Weir,
Brigadier-General.
Controller, Technical Department.

REPORT ON THE PFALZ SINGLE-SEATER (G.141).

This machine landed in the British lines near Bonnieul on Feb. 26th, 1918. It is a single-seater scout of interesting design. The number D.3, 4184/17 is painted on the fuselage. From its light construction and clean design, and from the great amount of care that has been taken to keep the fuselage of very good stream-line shape and so free from irregularities, it appears to be the result of a serious attempt to produce a scout machine with good performance.

In this connection the actual performance of the aeroplane as given below is especially interesting and instructive.

Some leading particulars follow :—

Weight empty	1,532 lbs.
Total weight	2,056 lbs
Area of upper wings	151.6 sq. ft.
Area of lower wings	88.4 sq. ft.
Total area of wings	240 sq. ft.
Loading per sq. ft. of wing surface	8.56 lbs.
Area of aileron, each	10.25 sq ft.
Area of balance of aileron	0.6 sq. ft.
Area of tail plane	12.1 sq. ft.
Area of fin	2.8 sq. ft
Area of rudder	6.0 sq. ft.
Area of elevators	12.7 sq. ft.
Total weight per h.p.	12.84 lbs
Crew	1
Armament	2 Spandau guns firing through propeller.
Engine	160 h.p. Mercédès.
Petrol capacity	21½ gallons.
Oil capacity	4 gallons

Performance.

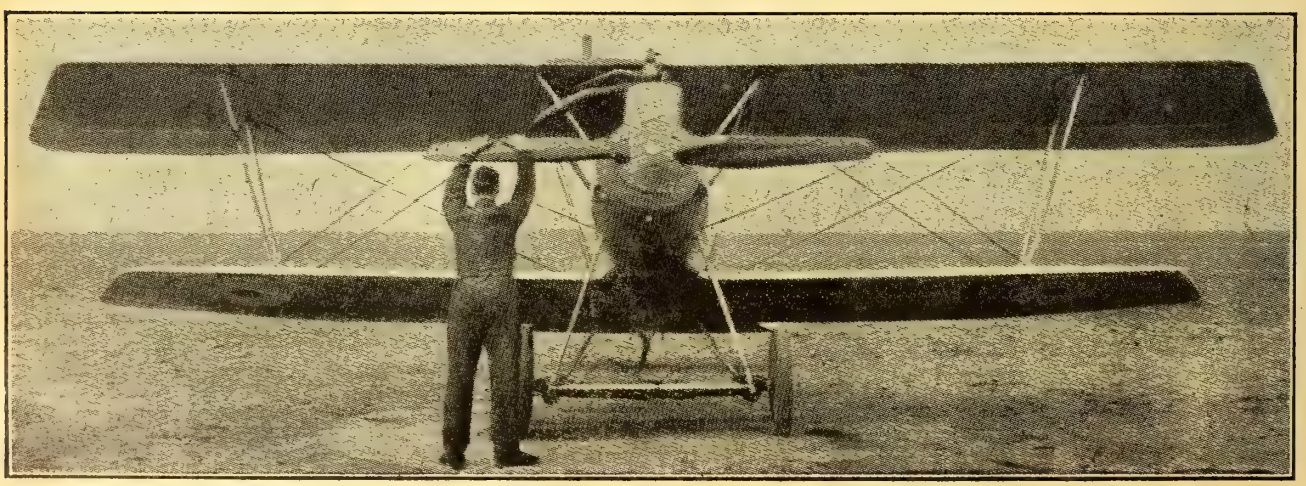
(a) Climb to 5,000 ft.	6 min. 55 sec.
Rate of climb in ft. per min.	605
Indicated air speed	73 m.p.h.
Revolutions of engine	1,330.
(b) Climb to 10,000 ft.	17 min. 30 sec.
Rate of climb in ft. per min.	360
Indicated air speed	67 m.p.h.
Revolutions of engine	1,310
(c) Climb to 15,000 ft.	41 min. 20 sec.
Rate of climb in ft. per min.	110.
Indicated air speed	50 m.p.h.
Revolutions of engine	1,280.

Speed.

At 10,000 ft.	102½ m.p.h.
At 15,000 ft.	91½ m.p.h.
Service ceiling at which rate of climb is 100 ft. per min.	15,800.
Estimated absolute ceiling	17,000.
Greatest height reached	15,000 ft.
Rate of climb at this height	110 ft. per min.
Air endurance	About 2½ hours
Military load	281 lbs.

Stability and Manœuvreability.

This machine is reported to be stable laterally and unstable directionally and longitudinally. It answers well to all controls, much better than does the Albatros D.5, but tends to turn to the



Front View of the Pfalz Single-seater D.III Type.

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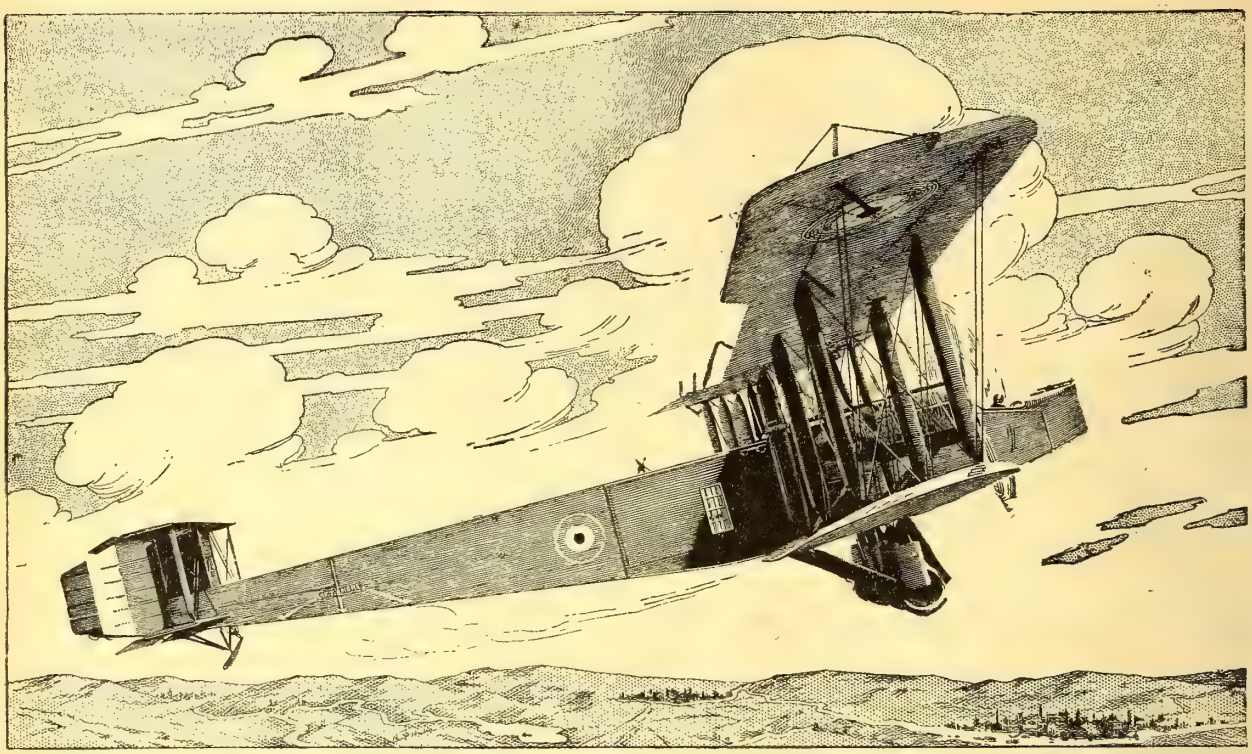
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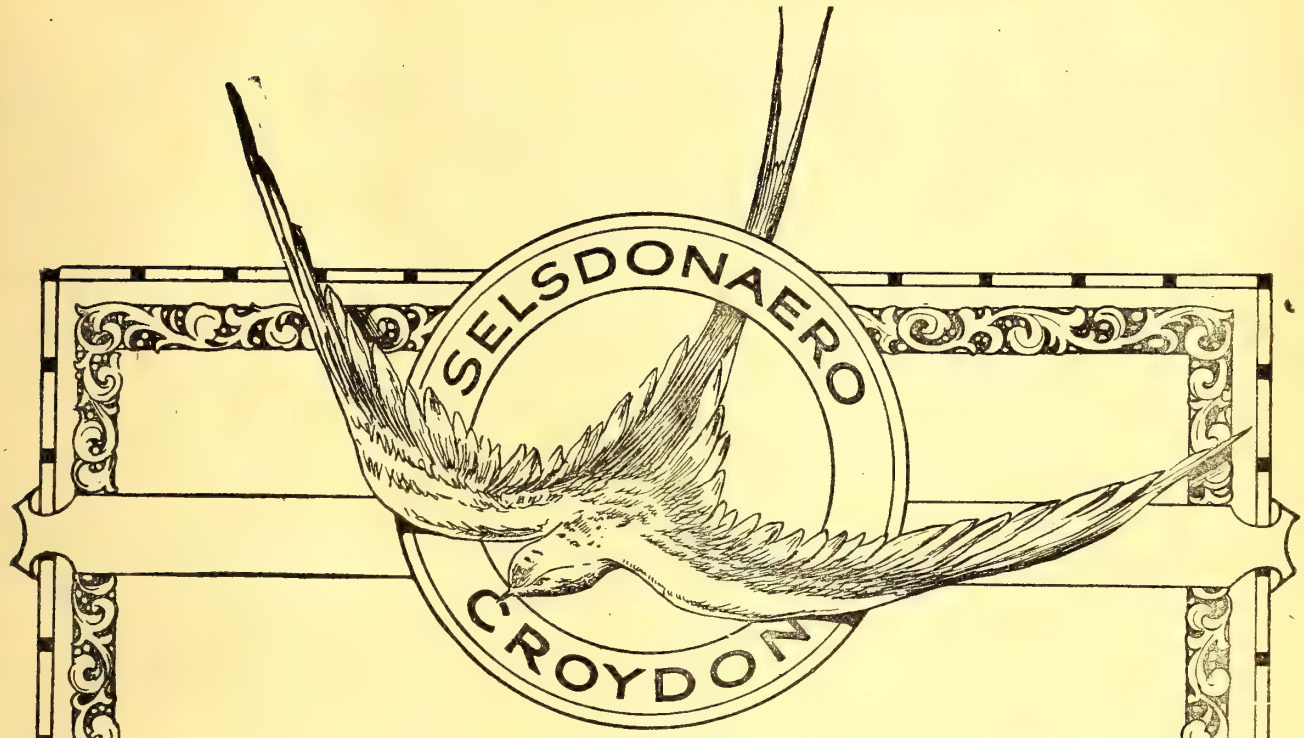


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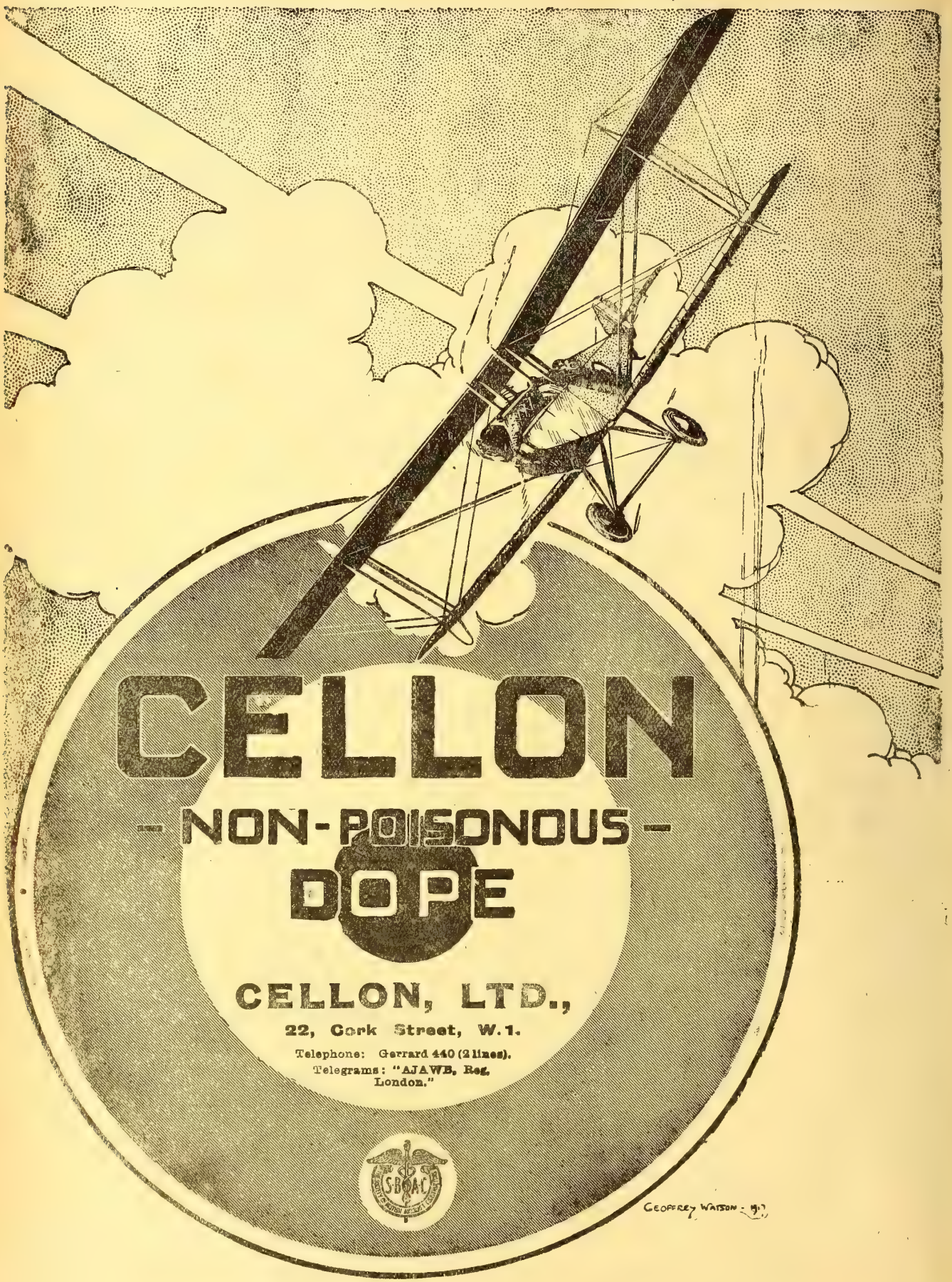


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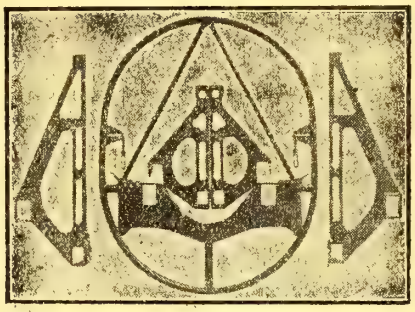



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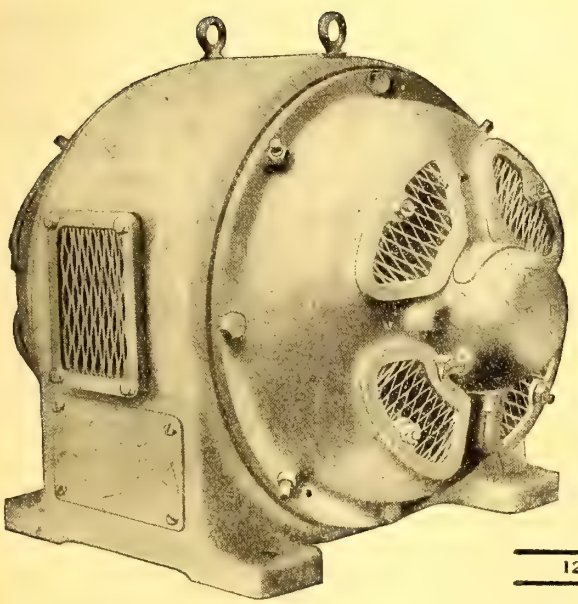
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C. G. Spencer and Sons, Ltd. (See under "Balloons").

Piston Rings—
British Chuck & Piston Ring Co., Coventry "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.
Allen & Simmonds, Ltd., Reading.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." 24214 Leeds.
The Pegasus Aircraft Co., Ltd., Totterdown Street, Tooting, S.W.17. Streatham 1242.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil. Yeovil 129.

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466

Rubber Tubing & Accessories—
Hancock, James Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Masticator, Isling, London." City 3811 and 3812.

Safety Belts—
C. H. Holmes and Son, 38, Albert Street, Manchester. "Semloh, Manchester." City 4432.

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Invertors, Redditch." Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Southampton 1337.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds. Leeds 21953.

Searchlights & Landing Lights—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd, Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London." Vic 4830.
British Metal (Kingston), Ltd., Kingston-on-Thames [Staffs
Rubery Owen & Co., Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Sparking Plugs—
Lodge Sparking Plug Co., Ltd., Rugby. "Igniter, Rugby." Rugby 235.
Ripault, Leo. & Co., Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

Springs—
Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Steel—
Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Firth, Thos., & Sons, Sheffield. "Firth, Sheffield." Sheffield 3230 to 3237.
Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Steel Stamps and Markings—
John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines)

Taper Pins—
Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—
MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

BUYERS' GUIDE cont. on next page.



The · Aeroplane ·

Acetylene Welding Plant—

Acetylene Corporation of Great Britain, Ltd, The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London" Vic 4830

Imperial Light, Ltd, 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London" 3540 Victoria (3 lines)

Aeroplane Manufacturers—

Aircraft Manufacturing Co, Ltd, Hendon. "Airmanship, Hyde, London." Kingsbury 220

Armstrong, Sir W, Whitworth & Co, Ltd, Newcastle-on-Tyne "Armstrong Aviation, Newcastle-on-Tyne" Gosforth 500

Blackburn Aeroplane & Motor Co, Ltd, Olympia, Leeds "Propellors, Leeds." Roundhay 345 (3 lines)

Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich" Norwich 851

British & Colonial Aeroplane Co., Ltd. (The Bristol Co.), Filton, Bristol "Aviation, Bristol" Bristol 2466

British Caudron Co., Ltd., Broadway, Cricklewood, N.W.2 "Caudroplan, Crickle, London" Hampstead 5551

Central Aircraft Co, High Road, Kilburn, N.W.6. "Aviduction, Phone, London" Hampstead 4403 and 4424

Davidson Aviation Co., Ltd., Hammersmith, W.6 Hammersmith 1492 (4 lines)

Dawson, John, & Co, Ltd, Newcastle-on-Tyne. "Dependable, Newcastle-on-Tyne" Central 2601 (2 lines)

Eastbourne Aviation Co., Ltd., Eastbourne. "Aircraft, Eastbourne" Eastbourne 1176

Glendower Aircraft Co., Ltd. 54, Sussex Place, South Kensington, S.W.7. "Glenacelle, Southkens, London" Kensington 7005 (3 lines)

Grahame-White Aviation Co, Ltd, London Aerodrome, Hendon. "Volplane, Hyde, London" Kingsbury 120

Handley Page, Ltd., 110, Cricklewood Lane, N.W.2. "Hydrophid, Crickle, London." Hampstead 7420

Hooper & Co., Ltd., 54, St. James St., Piccadilly, London, S.W. "Sociable, St. James, London." Regent 912.

Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines)

Martinsyde Ltd, Brooklands, Byfleet, "Martinsyde, Weybridge." Woking 331; Byfleet 171

National Aircraft Manufacturing Co., Ltd., 15, Drummond Crescent, Seymour Street, Euston Museum 3373.

"Nieuport" & General Aircraft Co, Cricklewood, London, N.W.2 "Nieuscout, Crickle, London" Willesden 2455

The Regent Carriage Co, Ltd., 126/132, New King's Road, Fulham, S.W.6 "Carbodis, London" Putney 2210-2211

Roe, A. V., & Co., Ltd, Manchester "Triplane, Manchester" City 8530-8531, Manchester

Saunders, S. E., Ltd, East Cowes, I.O.W. "Consuta, East Cowes" Cowes 103

Short Bros, Rochester, Eastchurch and Whitehall House, S.W. "Tested, Phone, London" Regent 378

Sopwith Aviation Co, Ltd, Kingston-on-Thames "Sopwith, Kingston" Kingston 1088 (8 lines)

Standard Aircraft Manufacturing Co, 28, Bow Common Lane, E. East 2823

Tarrant, W. G., Byfleet, Surrey "Tarrant, Byfleet" Byfleet 1, 2 & 3

Thames Aviation Works, 111, Curtain Rd., E.C.2 London Wall 9766

Vickers, Ltd, Imperial Court, Basil Street, Knightsbridge S.W.3 "Vickerfyta, Knights, London" Kensington 6830

Waring & Gillow, Ltd, Hammersmith "Warisen, Ox, London" Museum 6000

Westland Aircraft, Yeovil. "Aircraft, Yeovil" Yeovil 129

White, J. Samuel, & Co., Ltd., East Cowes "White, East Cowes" Cowes 1

Whitehead Aircraft (1917), Ltd, Richmond, Surrey "Whitecraft, Richmond, Surrey" Richmond 1780-1

Witton & Witton, 143, Fonthill Road, Finsbury Park, London, N.4 North 2110

Wycombe Aircraft Constructors, Ltd., High Wycombe, Bucks "Aircraft, High Wycombe" High Wycombe 84

Airships—

Airships, Ltd, High Street, Merton Wimbledon 1314

Short Bros, Rochester, Eastchurch, and Whitehall House, S.W. "Tested, 'Phone, London" Regent 378

C. G. Spencer and Sons, Ltd. (See under "Balloons")

Aluminium Castings (Sand and Die)

Coan, R. W., 239, Goswell Road, London, E.C.1 "Krankases, Isling, London" City 3940.

Balloons—

C. G. Spencer and Sons, Ltd, 504, Highbury Grove, N.5 "Aeronaut, London." Dalston 1293

Bent Timber Parts—

Hopton & Sons, George Street, Euston Square, London, N.W.1 "Hoptons, Eusquare, London" Museum 496. Also at Market Harborough, Leicestershire "Heptons, Market Harborough" Market Harborough 13.

The Atlas Bedstead Company, Bilston "Atlas, Bilston" Phone No 8 and 61

Bearings (Etonia Cast Phosphor Bronze)

Yorkshire Engineering Supplies, Ltd, Wortley, Leeds "Yes, Leeds" Central 3927.

Blowpipes (Oxy-Acetylene)

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic 4830.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London" Vic 3540 (3 lines)

Books (Aero Engines).

Dykes' Auto Encyclopedia, Gillam Dome Buildings, Richmond, Surrey

Buildings—

Boulton & Paul, Ltd., Rose Lane, Norwich "Aviation, Norwich." Norwich 851

The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1

Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey Wimbledon 1313

Ruberv, Owen, & Co, Darlaston, South Staffs

Cable Coverings and Cable Controls—

The Bowden Brake Co., Ltd., Tyseley, Birmingham. "Bowden, Acock's Green." Acock's Green 103 & 104.

Herbert Terry & Sons, Ltd, Redditch "Springs, Redditch." Redditch 61.

Carburettors—

Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2. Victoria 4670

Casein—

Nieuwhof, Surie & Co., Ltd, 5, Lloyds Avenue, London, E.C.3 "Surieodon, Fen, London" Avenue 34 and 35

Celluloid (Non-Flam.)—

Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London." Central 1306-7.

Clothing—

Burberrys, Haymarket, S.W.1 Regent 2165

Dunhill's, Ltd, Euston Road, N.W.1 "Dunsend, London" North 3405-6

Component Parts—

Accles & Pollock, Ltd, Oldbury, Birmingham "Accles, Oldbury" Oldbury 111 (4 lines)

Central Aircraft Co, High Road, Kilburn, N.W.6 "Aviduction, Phone, London" Hampstead 440, & 4424

P.D.V. Aircraft Co, Ltd, Princes Street, Richmond. "Acros, Richmond" Richmond 1681

Thompson Bros (Bilston), Ltd, Bradley, Bilston, England. "Thompson Bros, Bilston" Bilston 10

Cords, Tapes, and Threads—

MacLennan, J., & Co, 30, Newgate Street, E.C.1 And at Glasgow. City 3115

Dopes—

British Aeroplane Varnish Co, Ltd., 166, Piccadilly, W.1 "Tetrafrec, Piccy, London" Gerrard 2312

British Cellulose Co, 8, Waterloo Place, S.W.1 "Cellulate, London." Regent 4046

The British Emaillite Co, Ltd, 30, Regent Street, S.W.1 "Ridleypren, Piccy, London" Gerrard 280

Cellon, Ltd., 22, Cork Street, London, W.1. "Ajawb, Reg, London." Gerrard 440.

Engines and Parts—

Allen, W. H., & Co, Ltd, Bedford "Pump, Bedford" Bedford No 1.

Arrol-Johnston, Ltd, Dumfries "Mocar, Dumfries" Dumfries 281-282

Beardmore Aero Eng, Ltd, 112, Great Portland Street, W.1 "Beardmore, London" Gerrard 238

Dudbridge Iron Works, Ltd (Salmson), 87, Victoria Street, London, S.W.1 "Aeroflight, Vic, London." Vic 7026

Gordon Watney & Co, Ltd, Weybridge "Mercedes, Weybridge" Weybridge 550 (7 lines).

Engines and Parts (continued)—

Green Engine Co., Ltd., Twickenham. Richmond 1203

Gwynnes, Ltd, Hammersmith, W. "Gwynne, Hammersmith" Hammersmith 1910.

Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London" Gerrard 8926.

Rolls-Royce, Ltd, 14 and 15, Conduit Street, W.1 "Rolhead, London" Gerrard 1654-6-6

Sunbeam Motor Car Co., Ltd, Wolverhampton "Moorfield, Wolverhampton" Wolverhampton 685

The Gnôme & Le Rhône Engine Co, Ltd, 27, Buckingham Gate, S.W.1. "Elevenfold, London" Walthamstow 811 (2 lines).

Walton Motors, Ltd., Walton-on-Thames. "Motors, Walton-on-Thames" Walton-on-Thames 220.

Electrical Accessories—

Johnson & Phillips, Ltd, Charlton, London, S.E.7 "Juno, London" Central 2207; London Wall 1564

Mann, Egerton & Co, Ltd., 177, Cleveland Street, London, W.1. "Installing, Eusroad, London." Museum 70

Premier Electric Heaters, Ltd, 258, 259, and 260, Bradford Street, Birmingham "Fahrenheit, Birmingham." Midland 981.

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Electric Cables—

E. Kalker and Co., Coventry "Kalker, Coventry" Coventry 241.

Johnson & Phillips, Ltd, Charlton, London, S.E.7. "Juno, London" Central 2207; London Wall 1564.

Electric Lighting and Power—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.

Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Eusroad." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—

W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham" Birmingham 3622 Central (3 lines).

Flare Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London" Victoria 3540 (3 lines).

Flexible Shafts—

Herbert Terry & Sons, Ltd Redditch. "Springs, Redditch" Redditch 61.

Fluxes—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London" Victoria 3540 (3 lines).

Flying Schools—

Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton" Bournemouth 1160.

Furniture (Office)—

Cooke's (Finsbury), Ltd, Finsbury Pavement House, London, E.C.2 London Wall 573 and 6179.

Galvanising—

Boulton & Paul, Ltd, Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

Gauges—

J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17

Gears—

Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham. "Mossgear, Birmingham" East 407

Glue—

Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Bececolin, Cannon, London" City 1206

Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid) "Excroiden, Phone, London" Avenue 4611-2.

Meudine Co., 8, Arthur Street, E.C. Bank 5873.

Oldroyd, Wm, & Sons, Ltd., 9, Mincing Lane, E.C.3

Goggles—

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1 "Shatterlys, Piccy, London" Regent 1340

Hack Saw Blades and Machines—

Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London" London Wall 1880

Heating and Ventilating—

Chas. P. Kinnell & Co., Ltd, 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London" Hop 372 (2 lines).

Sturtevant Engineering Co, Ltd, 147, Queen Victoria Street, London, E.C.4 "Sturtevant, London" Central 7121 (6 lines).

The Thames Bank (Blackfriars) Iron Co, Ltd, Upper Ground Street, London, S.E.1 "Hot Water, Friars, London." Hop 703

Hollow Spars—

McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London" Hop 718.

Instruments—

British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1308.

Instruments (Scientific, Altimeters, etc.)—

The Cambridge Scientific Instrument Co., Ltd., Cambridge "Instrument, Cambridge." Cambridge 642.

Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17 "Aneroid, Phone, London" Walthamstow 180

Leather for Aeroplanes—

George Angus and Co, Ltd Newcastle-on-Tyne. City 72. Central 956-7. Quayside City 73.

Leather Cloth—

New Pegamoid, Ltd, 134, Queen Victoria Street, London "Pegamoid, Cent, London" City 9704 (2 lines).

Magneto Driving Pieces—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—

The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1 "Vicksmag, Phone, London" Museum 430.

The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry "Astertpidal, Coventry" Coventry 278

The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry." Coventry 1008-1009

Metal Casement Manufacturers—

Henry Hope and Sons, Ltd, 55, Lionel Street, Birmingham "Conservatory, Birmingham" Central 909 (2 lines)

Metal Manufacturers—

Clifford, Chas, & Sons, Ltd, Birmingham "Clifford, Birmingham." Central 42-43. Avenue 1432

Metals in General—

Samuel Mercer & Co, 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London." City 6342.

Metal Parts and Fittings—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).

Aeroplane General Sundries, Ltd, Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London" Holborn 4959

Aircraft Supplies Co, Ltd., Ascot House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).

Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.

Bayliss, Jones & Bayliss, Ltd, Wolverhampton (Bolts and Nuts.) "Bayliss, Wolverhampton" Wolverhampton 1011

Blackburn Aeroplane & Motor Co, Ltd, Olympia, Leeds "Propellors, Leeds" Roundhay 345 (3 lines)

British Metal (Kingston), Ltd., Kingston-on-Thames

Lombard Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham" Midland 211 (2 lines)

Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing Eusroad, London." Museum 70.

Mountford, Fredk., Lt., Lifford, Birmingham. "Fremo, Birmingham." King's Norton 261

Ruberv Owen & Co., Darlaston, South Staffs

Sankey, Joseph, & Sons, Ltd, Wellington, Shropshire. "Saukey, Wellington, Salop" Wellington 66.

The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London" Holborn 410

The Selsdon Aero & Engineering Co, Ltd, 1, Albemarle Street, Piccadilly, W.1 "Selaero, Phone, London" Regent 1181

The Rotax Motor Accessories Co, Ltd, Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London" Willesden 2480

Metal Parts and Fittings (continued)

Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros, Bilston" Bilston 10

Wooler Engineering Co, Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—

Montgomery, Smith & Co, Ltd., Keynsham, near Bristol. "Ingenuity, Saltford" Keynsham 21.

Metric Bolts—

Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415

Ruberv Owen & Co, Darlaston, South Staffs.

Miscellaneous—

Anderson, D., & Son, Ltd. (Roofs) Belfast. "Anderson, Belfast" Belfast 4033-4034-4035.

Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines)

British Metal (Kingston), Ltd, Kingston-on-Thames

Brown Bros, Ltd, Great Eastern Street, E.C.1 "Imbrowned, Bethroad, London" London Wall 6300.

Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham." Central 793.

MacLennan, J., & Co, 30, Newgate Street, E.C.1., and at Glasgow Tapes, Cords and Threads. City 3115.

Motor Cars—

Arrol-Johnston, Ltd., Dumfries "Mocar, Dumfries" Dumfries 281-282.

Mann, Egerton & Co, Ltd, 374/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London" Museum 70.

Standard Motor Car Co, Coventry. "Flywheel, Coventry." Coventry 530 (4 lines).

Nameplates and Labels—

British Metal (Kingston), Ltd., Kingston-on-Thames

The Clegg Metal Engraving Co., Worthing "Clegg, Worthing"

Observation Panels—

Triplex Safety Glass Co., Ltd, 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Oils—

C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2 "Cheery, Cent, London" Central 11305 and 13460.

Parachutes—

E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London" London Wall 3266-3267.

C. G. Spencer and Sons, Ltd. (See under "Balloons").

Piston Rings—

British Chuck & Piston Ring Co., Coventry "Rings, Coventry." Coventry 723.

The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.

Allen & Simmonds, Ltd., Reading.

Presswork—

Ruberv Owen & Co., Darlaston, South Staffs

Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61

Propellers—

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)

Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich" Norwich 851.

Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston." Kingston 672.

Integral Propeller Co., Ltd. "Aviprop, Hyde, London" Hendon 9. Kingsbury 104

Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521

Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).

Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." 24214 Leeds.

The Pegasus Aircraft Co., Ltd., Totterdown Street, Tooting, S.W.17 Streatham 1242.

Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.

Westland Aircraft, Yeovil. "Aircraft, Yeovil. Yeovil 129.

Propeller Cases—

The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—

The Foster Instrument Co, Letchworth, Herts Foster Instruments, Letchworth. Letchworth 26

Radiators—

Gallay Radiator Co, Ltd, 198, Great Portland Street, W.1 "Galvradico, Wesdo, London" Mayfair 4826

Rigging for Aircraft—

Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466

Rubber Tubing & Accessories—

Hancock, James Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Masticator, Isling, London." City 3811 and 3812.

Safety Belts—

C. H. Holmes and Son, 38, Albert Street, Manchester. "Semloh, Manchester" City 4432.

Screw-driving Machines—

Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Invertors, Redditch" Redditch 74.

Seaplane Manufacturers—

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).

Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).

Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.

Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Southampton 1337.

Seats for Aeroplanes—

Bowser, E., 50, Park Lane, Leeds Leeds 21953.

Searchlights & Landing Lights—

Imperial Light, Ltd, 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

The Rotax Motor Accessories Co, Ltd, Victoria Road, Willesden Junction, N.W.10 "Rodynalite, Phone, London" Willesden 2480

Shackles—

British Gold Shell Ring Co., Ltd., Hounslow, Middlesex "Golshel, Hounslow" Hounslow 254

Sheet Metal Pressings—

Accles & Pollock, Ltd, Oldbury, Birmingham. "Accles, Oldbury" Oldbury 111 (3 lines)

Blackburn Aeroplane and Motor Co, Ltd, Olympia, Leeds "Propellors, Leeds." Roundhay 345.

W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham" Central 550.

British Metal (Kingston), Ltd, Kingston-on-Thames.

London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.

Ruberv Owen & Co, Darlaston, South Staffs.

Sheet Metal Work—

The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London" Vic 4830

British Metal (Kingston), Ltd, Kingston-on-Thames [Staffs

Ruberv Owen & Co, Darlaston, South

The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1 "Selaero, Phone, London" Regent 1181.

Imperial Light, Ltd, 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London" Victoria 3540 (3 lines).

Sparking Plugs—

Lodge Sparking Plug Co, Ltd, Rugby. "Igniter, Rugby" Rugby 235.

Ripault, Leo. & Co., Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London" Gerrard 7758.

Springs—

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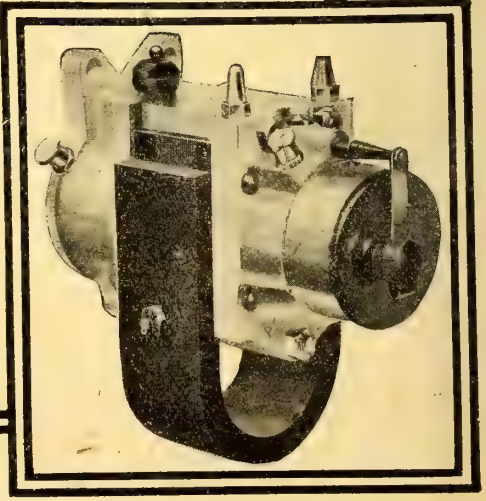
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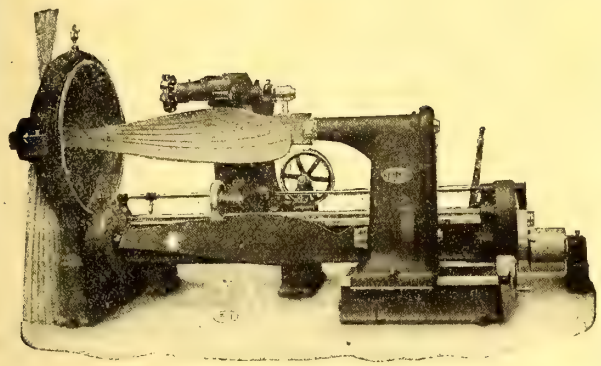


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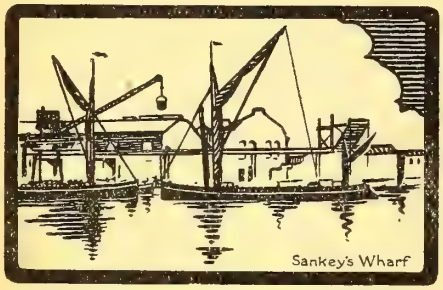
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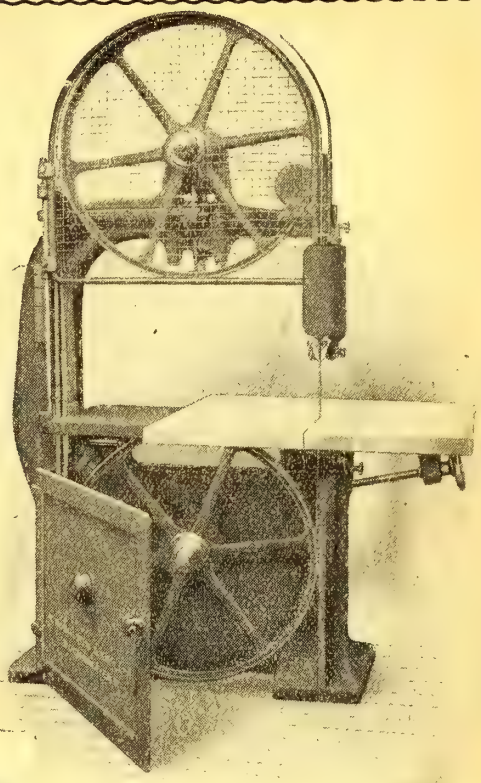
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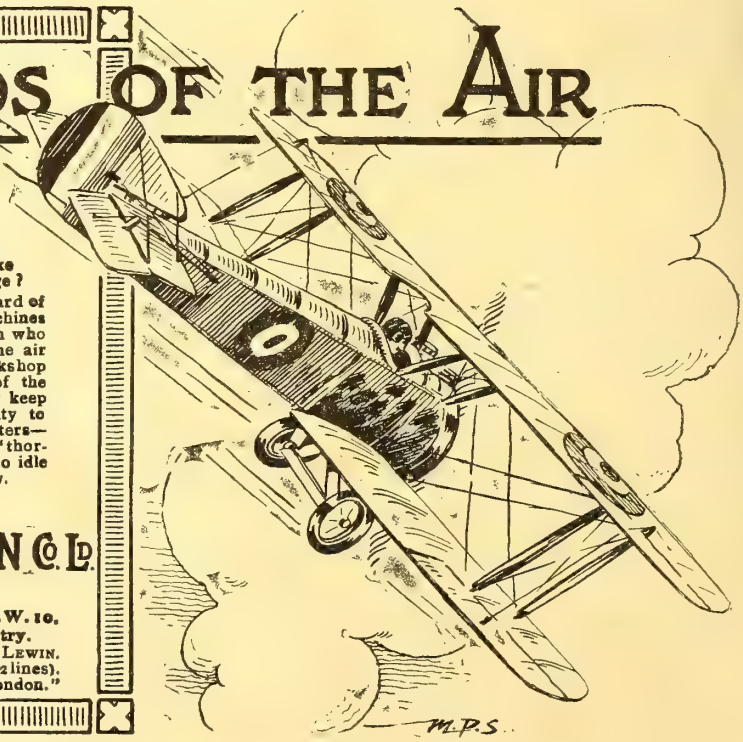
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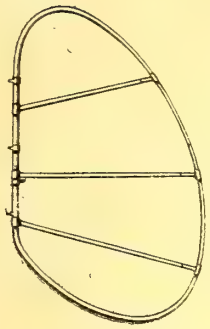
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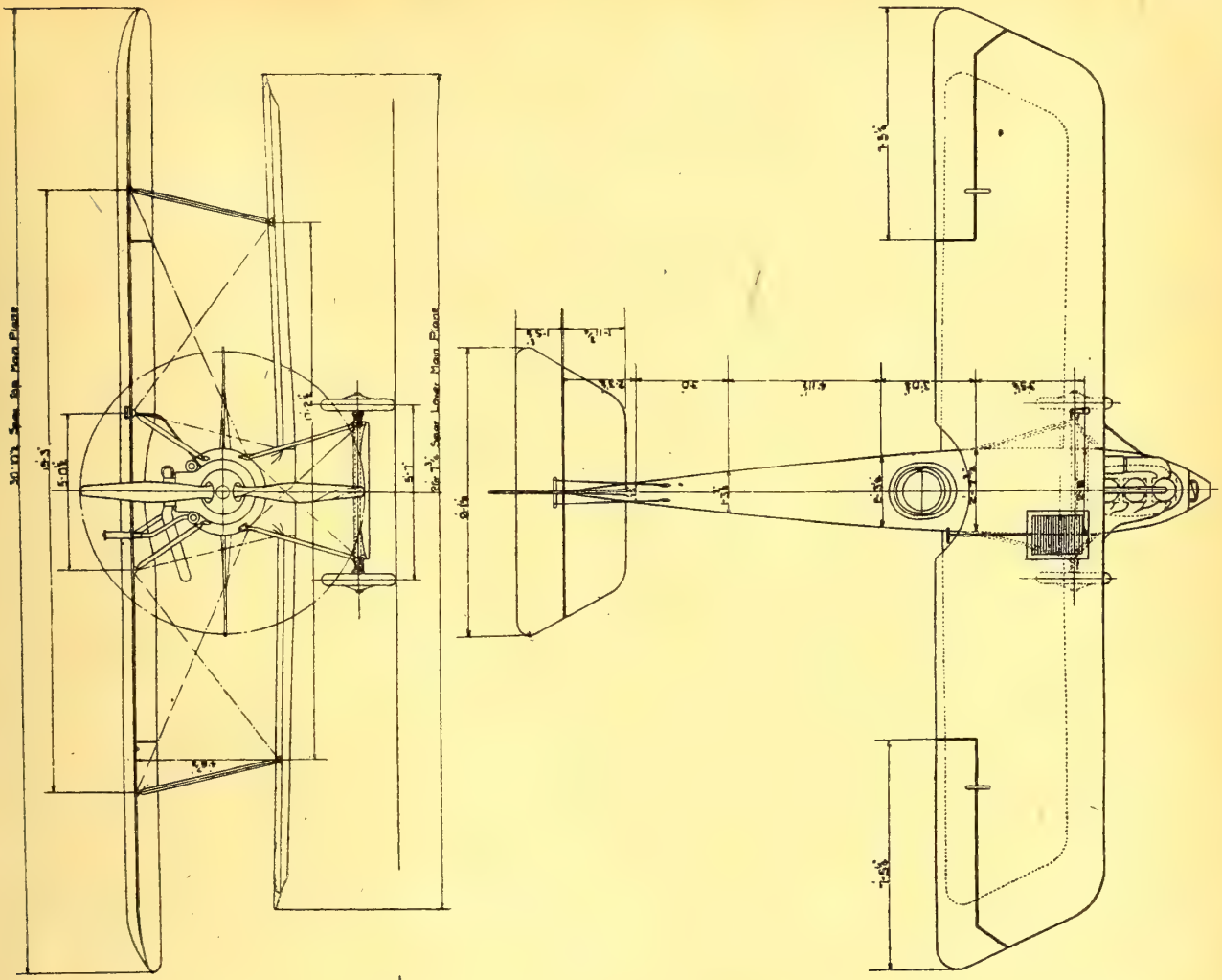
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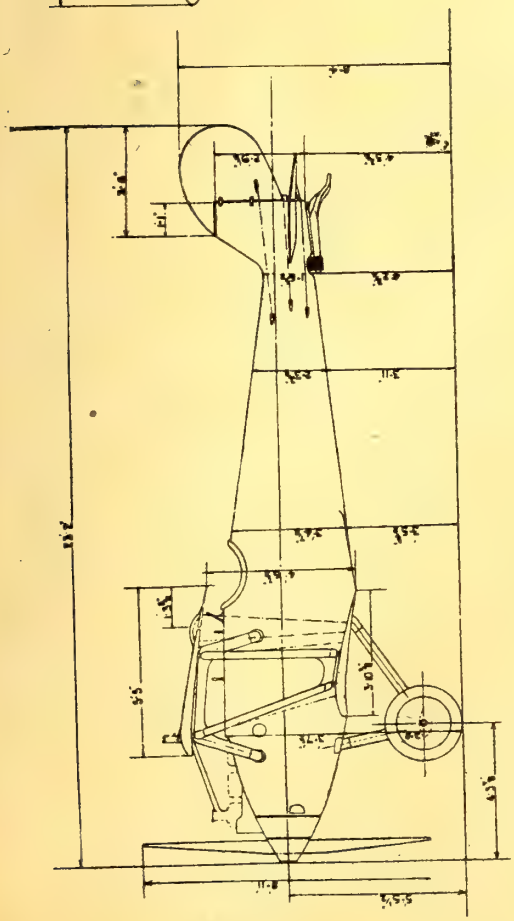
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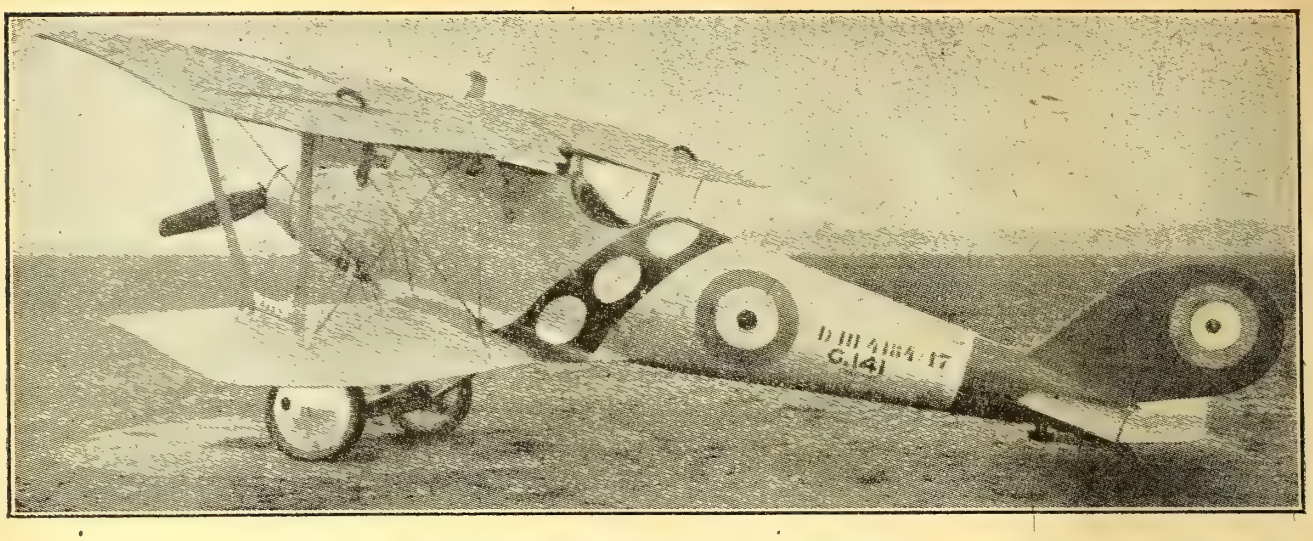




PFALZ SCOUT

SCALE 1 INCH = 1 FOOT

Span of Top Plane	30' 10"
Span of Lower Plane	26' 7⅜"
Length Overall	23' 2"
Gap at Inner Struts	4' 9⅜"
Gap at Outer Struts	4' 6⅜"
Chord of Top Plane	4' 5⅜"
Chord of Lower Plane	3' 11"
Angle of Incidence	6° 20'
Dihedral Angle (Lower Plane)	1°



Three-quarter Rear View of the Pfalz Chaser.

left in flight. It is not tiring to fly, and is normally easy to land. Though the tail skid is of the non-steering type, no difficulty is found in directing the machine on the ground.

View.

As may be expected from the shape and disposition of the wings, the view is excellent in all directions—except, perhaps, on a downward glide, when the top plane interferes to some extent.

Wings.

The wings and wing bracing are a copy of Nieuport practice. The top plane is in one piece, and has no dihedral angle. The smaller lower planes have a dihedral angle of 1 deg.

In flying position the leading edge of the upper plane is 15 inches in front of the leading edge of the lower plane.

Ailerons are fitted to the upper wings only, and both upper and lower planes have the characteristic wash-out at the tips.

Wing Construction.

The spars of this machine are well worthy of attention. The webs are made of a thick central core of good straight grained wood, covered on each side with one layer of extremely thin 3-ply. The 3-ply stiffens up the webs against buckling inwards, thus enabling thinner webs to be used than if not reinforced. The flanges are spindled to give good glueing area and fillet, and diaphragms are fixed at each rib to transmit the shear stress across the spar. This is a good feature, and might with advantage be incorporated in all box spars.

These several points are clearly shown in Fig. 1.

The ribs are built up in the usual way of 3-ply and flanges, and are of light construction. The wing section, with R.A.F. 14 Section superimposed for purposes of comparison, appears in Fig. 2, and Fig. 3 gives

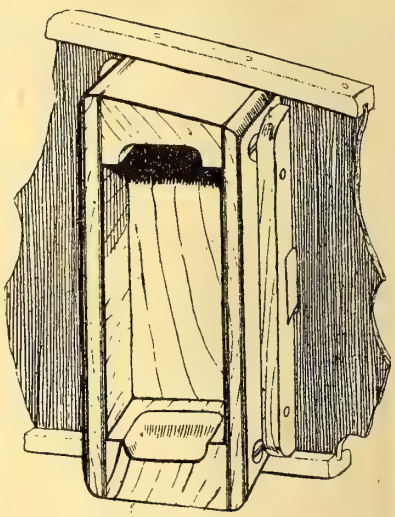


Fig. 1.

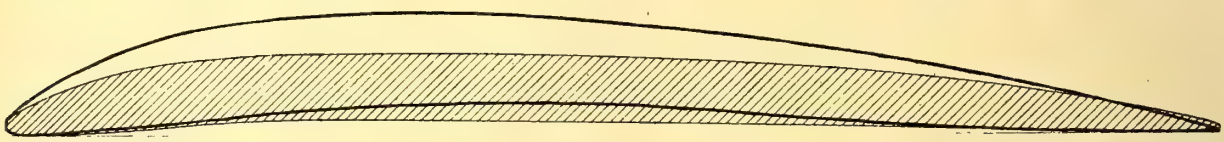
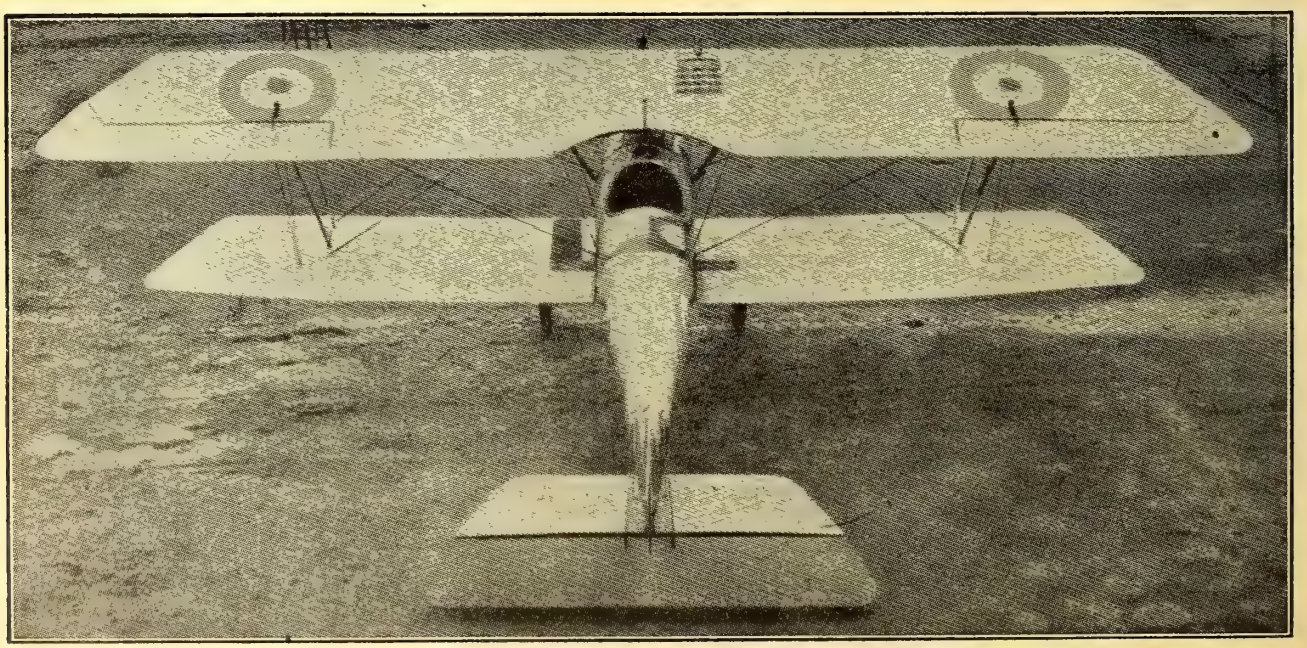


Fig. 2.



Rear View of the Pfalz Chaser, D.III Type.

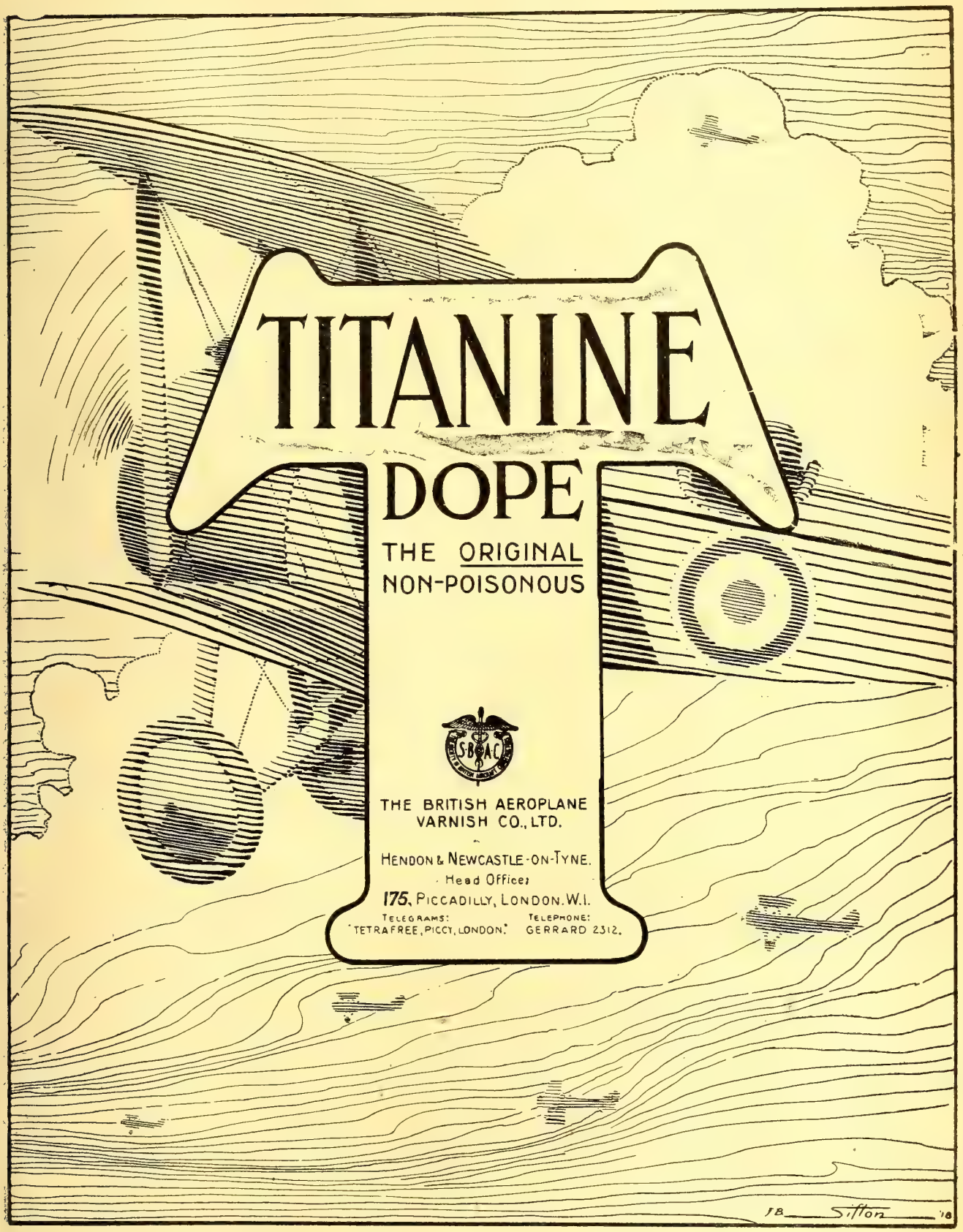

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Fig. 3.

an idea of the rib construction. They are placed 350 mm. apart, and auxiliary ribs are placed alternately with the true ribs. The internal bracing presents no novel feature, the usual steel compression tubes being braced with piano wire and swaged rod.

The ailerons are balanced, the area of the balanced portion being 0.6 sq. ft. They work in the usual way with the aileron lever passing through a slot in the upper plane.

Struts.

As there is no dihedral angle to the upper plane, the usual cabane type of centre section is not found. Instead, the centre section struts slope outwards, as can be seen in the photographs.

The lower extremity of the V strut is not a point, but each separate limb of the Vee is fixed to a steel tube incorporated in

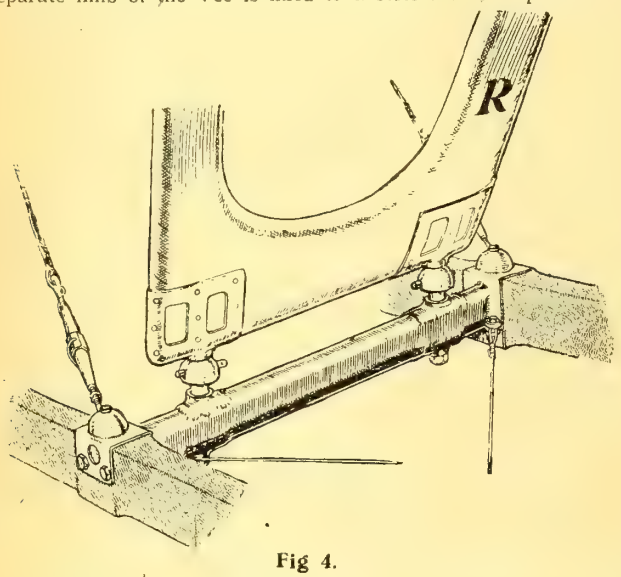


Fig 4.

the wing structure. This is made quite clear in Fig. 4. The struts themselves are built up solidly of wood.

Fuselage.

This is by far the most novel feature of the Pfalz. The fuselage is simply a light wooden framework, without any bracing, covered with two skins of three-play. These skins are arranged spirally in different directions. This construction, as well as the method of splicing the three-ply is shown in Figs. 5 and 6. This lends itself to the very characteristic way in which the lower wings are faired off into the fuselage. The fuselage section is oval throughout its whole length. It is obviously of excellent streamline shape, but pilots have reported a tendency to whip when machine is in flight. Only the nose and engine cowl are of aluminium.

A good idea of the appearance of the fore-part of the fuselage, as well as of the way in which the lower plane merges by means of a rather elaborate three-ply fairing into the body, is given by Fig. 7, and by the various photographs of the aeroplane.

Another view of this feature—the junction of lower plane and fuselage—is presented in Fig. 9. Both of these sketches also serve to show the large number of aluminium traps or doors with which the front part of the body is provided. These doors all have some locking device, designed to give a minimum of trouble to operate, which guarantees the shut position of the doors during flight.

This shows the safety-belt anchorage, which incidentally serves as a strengthening for the fuselage framework.

Undercarriage.

This is of the usual Vee type, and is constructed of streamlined steel tube. Both the front and rear limbs are of similar section, the greater diameter being 48 mm. and the lesser 31 mm. No wooden fairing is fitted. The axle lies between the two wooden compression struts, and is covered by an aluminium lid, hinged at the front side, which is kept in place by the pressure of the air. The shock absorbers are of rubber, which is somewhat unusual in German aeroplanes at present.

Controls.

The control lever works a longitudinal rocking shaft, which in turn actuates the ailerons. The aileron cables pass through the wings, and are covered with a varnished tube very neatly

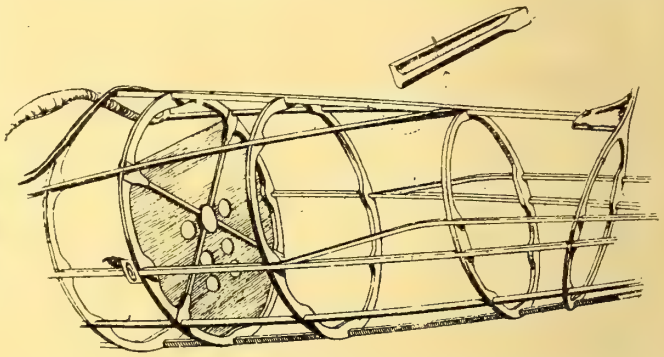


Fig. 5.

made of rolled paper. The elevators are worked by cables taken direct from the control lever—one above and one below the pivot. The elevator controls can be quickly locked by the simple device shown in Fig. 11.

The Rudder Bar.

This is, as usual, of welded sheet steel, but is capable of some adjustment, as may be seen on reference to Fig. 10. All control cables lie for the greater part of their length within the fuselage.

Tail.

The fixed planes are noticed to have a flat top and a cambered lower surface, as in the Rumpler, although the camber is not so pronounced in the present machine.

The elevator is not divided, since the rudder is of such a shape as not to interfere with free elevator movement. The vertical fin has a wooden framework covered with three-ply, and is neatly faired off into the fuselage. The balanced rudder is of light welded steel framework, and is covered with fabric. The framework of both tail planes and elevators is of wood. (See Figs. 12, 14 and 15.)

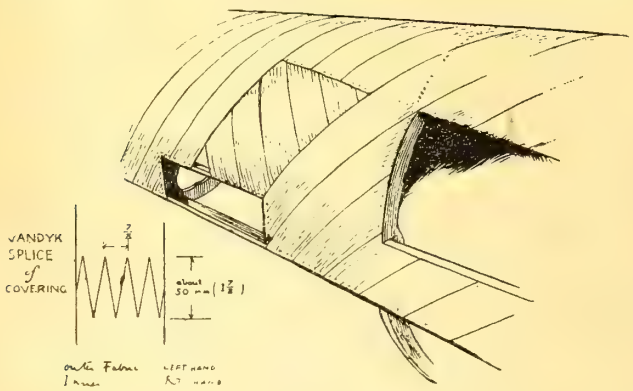


Fig. 6.

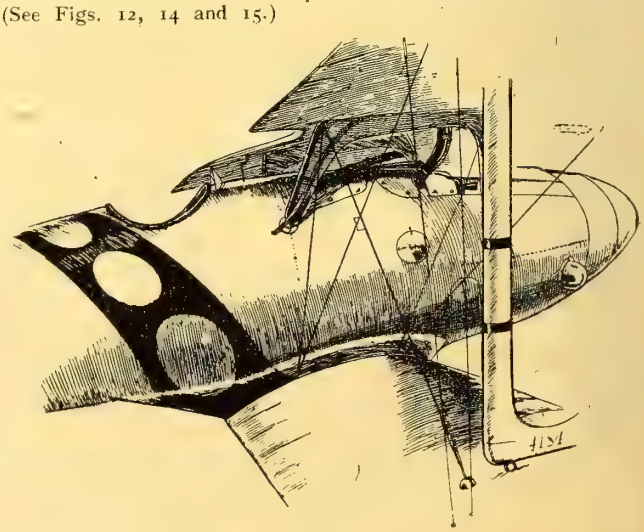


Fig. 7.



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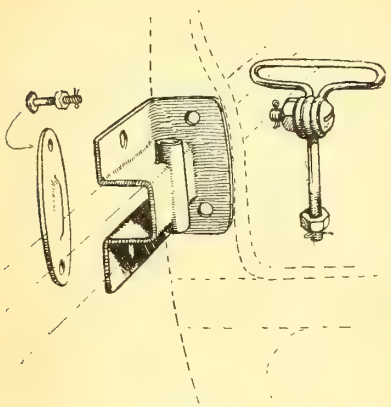


Fig. 8.

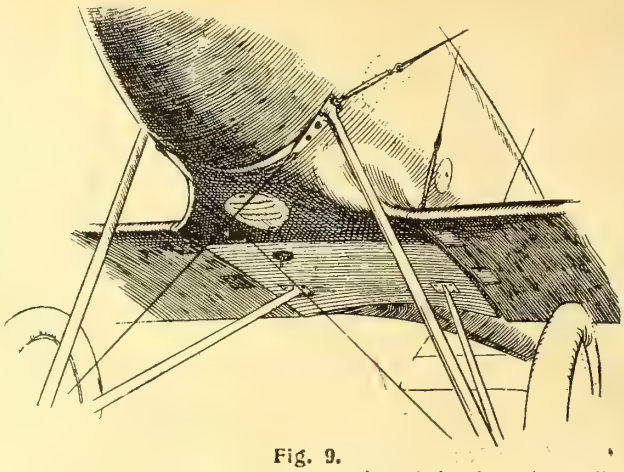


Fig. 9.

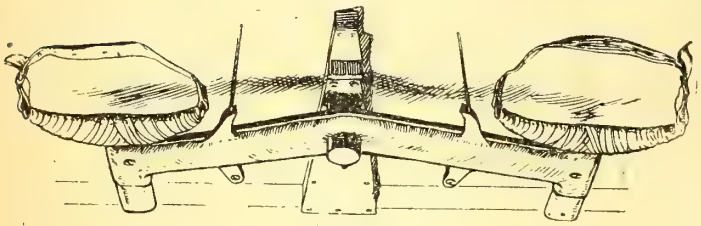


Fig. 10.

The Tail Skid.

Though of unusual design, the skid performs its functions satisfactorily, and is fixed in such a manner as not to be liable to weaken the sternpost. Its shape may be gathered from Fig. 13.

Engine.

The engine, a 160 h.p. Mercédès, No. 35482 BN 669 R.N. 83, guaranteed till 4/4/18, is mounted on wooden bearers, which are supported on transverse bulkheads of wood. The controls are very conveniently arranged. Besides the usual quadrant control, which is placed at the pilot's left hand, the port-side limb of the inverted vee, which forms the head of the control lever, is a twist grip throttle.

The quadrant control works in connection with the twist grip, and may also be used separately. Reference to Fig. 11 will make this clear.

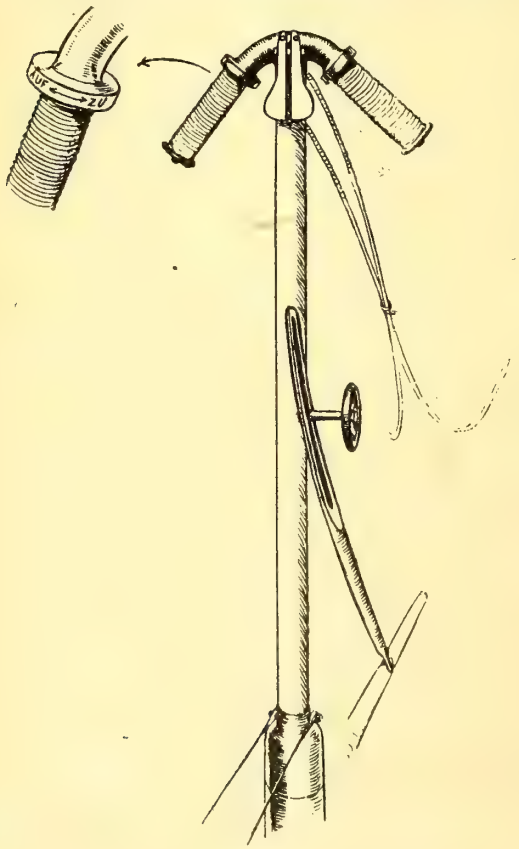


Fig. 11.

Petrol System.

The main petrol tank holds 12½ gallons, and is to be found in front of the pilot, underneath the ammunition magazines. It works, of course, under pressure, which is first supplied by the hand-pump and then maintained by the air-pump driven by the engine cam-shaft.

A secondary gravity tank capable of containing 9 gallons is situated in the port-side of the centre section, balancing the radiator. The filler-cap of this tank is visible in the photograph of the machine as seen from the rear.

The oil system is of the usual Mercédès type; the engine sump contains 2¾ gallons; and the small tank placed alongside the engine holds 1¼ gallons.

Radiator.

As is common German practice, the radiator (Fig. 17), is placed in the centre section, on the starboard side. The tubes are placed horizontally and are of oval section. Aluminium deflecting fins are fixed on to the lower side, and a water head is maintained by means of a small vertical tank of stream-line cross section, to the top of which is fixed a small conical pipe with the wide end open and facing forward.

Armament.

The pilot controls the fire of two Spandau guns (Nos. 7961, 7602), arranged one on either side of the engine, inside the cowl. The triggers which operate the interrupter gear are in their usual place at the head of the control column.

The guns are not accessible during flight. (See Fig. 18.)

Instruments.

These present no unusual features. There is no dashboard,

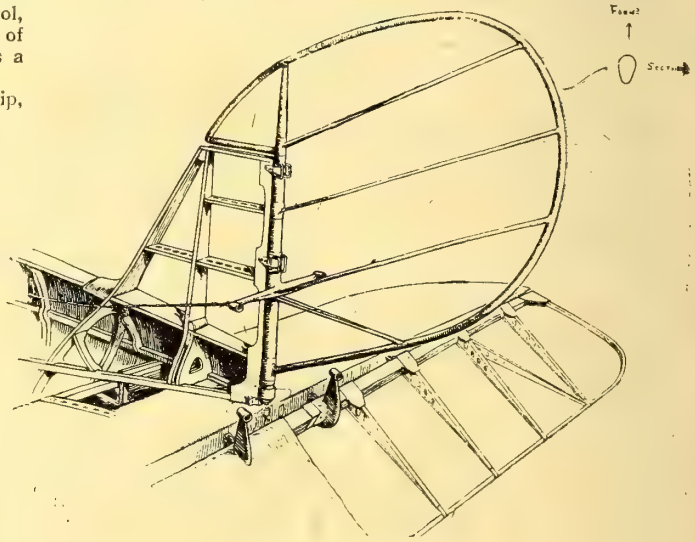


Fig. 12.

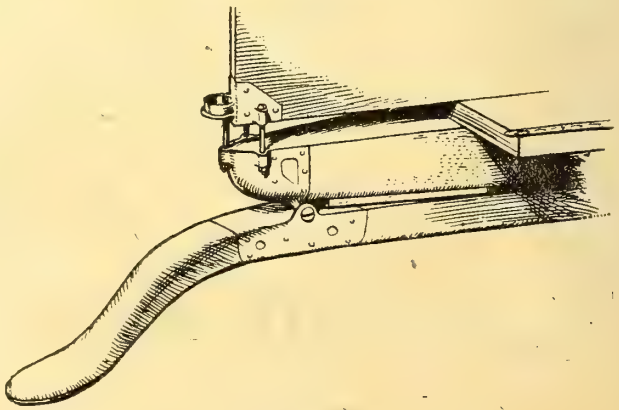


Fig. 13.



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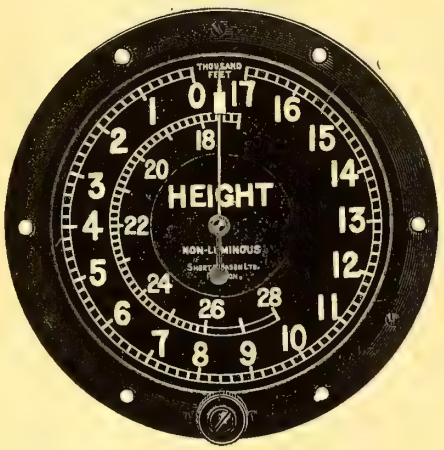
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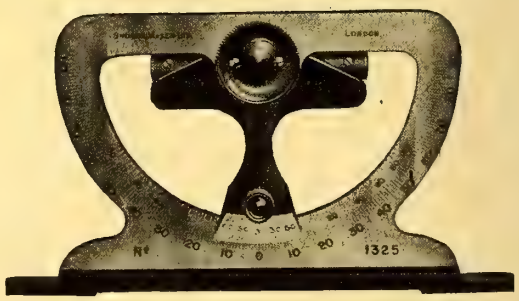
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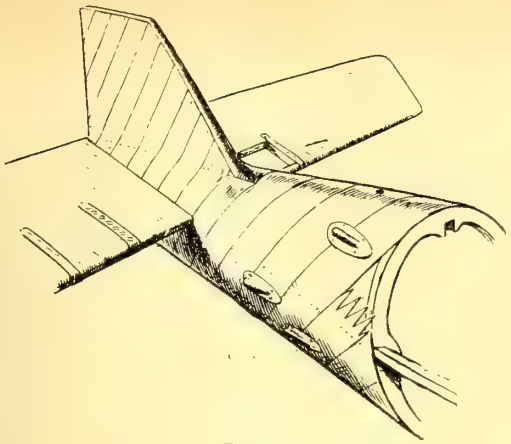


Fig. 14.

the instruments being distributed in convenient positions in the cockpit. The compass is placed on the right hand side of pilot's seat, in a low position, and the deviation card is dated 2/11/17.

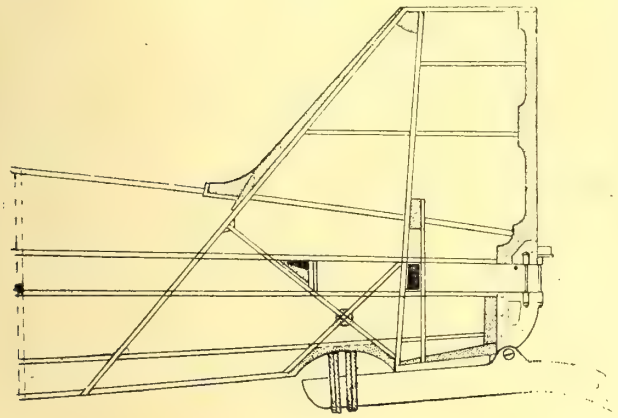


Fig. 15.

A Maximail petrol gauge is fitted in the centre of machine in front of the rudder bar, on the top of the main tank.

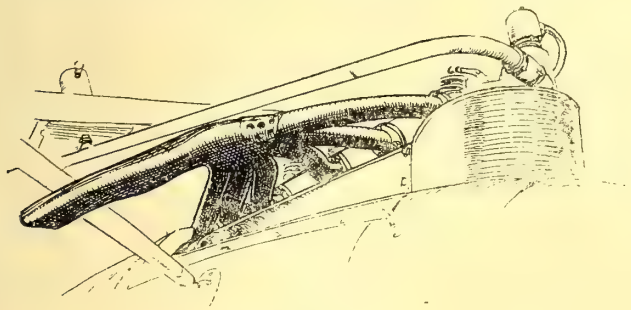


Fig. 16.

FABRIC AND DOPE.

The fabric appears to be flax; it is of the ordinary highly calendered type, but somewhat finer and thinner than the average.

Sections show that a fairly thick layer of clear dope had been followed by a thin layer of aluminium dope, very unevenly applied.

CAMOUFLAGE.

This machine is not camouflaged with the usual printed fabric, but presents a silvery appearance on account of the aluminium dope. The tail is painted a fairly dark brown, with the two colours meeting abruptly in a line.

AIRSCREW.

This is an Axial No. 5334, diameter 2770; pitch 2200. There are seven laminations—one of walnut, three of mahogany, and three of sycamore.

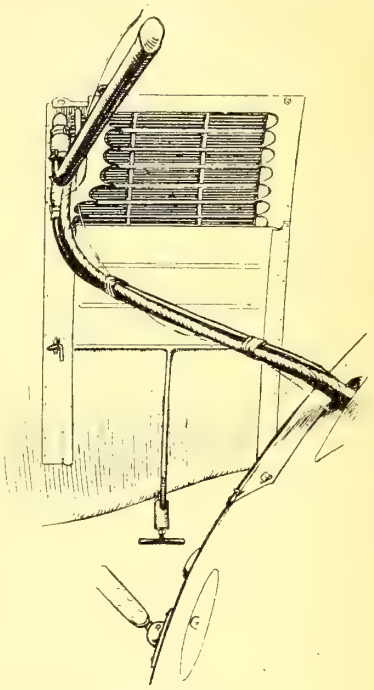


Fig. 17.

This aeroplane is to be seen at the Enemy Aircraft View Rooms, Agricultural Hall, Islington. The necessary pass may be

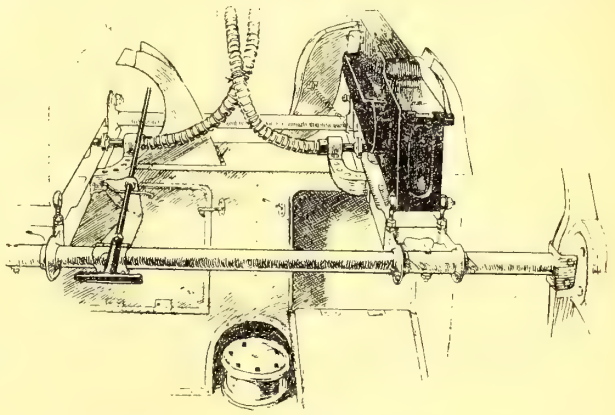


Fig. 18.

obtained, by those entitled to it, by writing to The Controller, Technical Dept., Ap.D.(L.), Central House, Kingsway, W.C.2.

W. G. A. Ap.D. (L.).
J. G. WEIR,
Brigadier-General.
Controller, Technical Department.

AN AIRCRAFT FUNCTION.

An interesting function took place on August 31st, when Brig.-Gen. W. Alexander, C.M.G., D.S.O., Controller of Aircraft Supplies, performed the ceremony of officially opening the new extensions to the works of Hay, Harden & May, Ltd., and the new canteen which has just been completed and is now being run under the auspices of the Y.M.C.A.

In a most enlightening speech, the General stated that it would be essential after the war for establishments of this character to be kept at their full working capacity, and not allowed to become derelict. He also paid a tribute to the splendid support received by his Department during the war from the Aircraft Manufacturing Company and its subsidiary companies, and stated that he looked to the Aircraft Manufacturing Company for important new designs.

In declaring the canteen open he spoke in eloquent terms of the magnificent work done all over the country and at the front by the Y.M.C.A., and said he was sure that that body would do everything possible towards the comfort of the firm's employees.

Sir Frank Baines, K.C.B., M.V.O., whose department was responsible for the construction of the extension, made a most interesting speech, and followed Mr. Holt Thomas who acknowledged in suitable terms the tribute which Gen. Alexander had paid to the Aircraft Manufacturing Company, and gave some very interesting details of his own association with flying and aircraft construction.

After the ceremony, followed by luncheon, an adjournment was made to the Sports Ground of the Hythe Aircraft Athletic Club, where the Firm's employees were holding their First Annual Sports. The meeting was very well supported and the competition very keen. After the sports a concert was held, followed by dancing, and at 9 p.m. "God Save the King" ended the festivities.

THE WHITEHEAD SPORTS.

The annual sports of Whitehead Aircraft, Ltd., were held on Sept. 14th at Feltham, Lady Haig, accompanied by Mr. and Mrs. J. A. Whitehead and Mr. G. A. Wingfield, was present, and distributed the prizes. In proposing a vote of thanks to Lady Haig, Mr. Cruddas, representing General Alexander, of the Air Ministry, spoke of the great importance of keeping up the good supply of machines, and congratulated the Whitehead factory upon the splendid work done in that direction, and exhorted the workers to put in still further efforts, and thus drive the wedge home.

Lady Haig thanked the workpeople for the gift of a silver model aeroplane, and said she would always treasure it as a memento of a most interesting occasion.

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THE PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by THE AEROPLANE from the current Official Patents Records.

PATENTS APPLICATIONS.

Alexander, W. Aero clinometer. No. 14546. Sept. 7th.

Boulton & Paul. Aeroplane flying-machines. No. 14437. Sept. 5th.

Brown, H. Self-sealing petrol tank for aeroplanes, etc. No. 14229. Sept. 2nd.

Clark, W. P. Construction of aeroplanes. No 14586. Sept. 7th.

Crawford, A. E. Propelling-apparatus for aeroplanes, etc. No. 14205. Sept. 2nd.

Diggle, S. Propellers or tractors for aerial or marine propulsion or traction. No. 14515. Sept. 6th.

Dunwell, W. Manufacture of aerial propellers, etc. No. 14467. Sept. 5th.

Eunson, G. Controlled aerial bomb. No. 14271. Sept. 3rd.

France, A. G. Device for tensioning or straining wires, cables, etc. No. 14427. Sept. 5th.

France, A. G. Means for anchoring or attaching stay wires, cables, etc. No. 14486. Sept. 6th.

Holroyd, V. A. Stranded wire straining or bracing cables as used in aircraft practice. No. 14488. Sept. 6th.

Howorth, G. F. Sights for anti-aircraft guns. No. 14485. Sept. 6.

Ingram, C. Aero compass. No. 14440. Sept. 5th.

Ireland, A. J. T. Metal airscrews. No. 14472. Sept. 5th.

Ireland, A. J. T. Method of balancing airscrews, etc. No. 14473. Sept. 5th.

Lesster, A. A. Aeroplane-towing clamp. No. 14550. Sept. 7th.

Mallinson, B. H. Combined radiator and air-intake for aircraft. No. 14203. Sept. 2nd.

May, W. J. Bomb-sighting and course-steering apparatus for aeroplanes, etc. No. 14269. Sept. 2nd.

Mooney, D. J. Metallic frame-members for aircraft. No. 14,305. Sept. 3rd.

Mooney, D. J. Metallic frame-members for aircraft. No. 14388. Sept. 4th.

Moore, J. Method of constructing wood spars for aircraft. No. 14418. Sept. 5th.

Norrington, J. R. Buckle for airmen's safety belts. No. 14326. Sept. 3rd.

Nutt, H. V. Tail and rudder for aeroplanes. No. 14272. Sept. 3.

Sage & Co., F. Aircraft. No. 14407. Sept. 4th

Turner, H. Gough-. Flying-machines, engines, guns, floats, instruments, and parts for use therewith. No. 14544. Sept. 7th.

Watts, H. C. Construction of airscrews. No. 14471. Sept. 5th.

Wylie, H. N. Aircraft members made of thin metal. No. 14266. Sept. 2nd.

Wylie, H. N. Metal struts for aircraft. No. 14267. Sept. 2nd.

COMPLETE SPECIFICATIONS ACCEPTED.

118,460. Aug. 30th, 1917. Toupoul, E. W. Toy aeroplanes.

118,472. Sept. 10th, 1917. Aeronautical Instrument Co., and Brewer, G. Balloons.

118,474. Sept. 11th, 1917. Aeronautical Instrument Co., and Brewer, G. Balloons.

118,505. Oct. 24th, 1917. Dew, S., and Dew, G. Instrument or apparatus for use on air or water craft for the purpose of indicating the position of the craft in relation to the horizontal.

118,514. Nov. 13th, 1917. McClellan, J. H., and Selby, C. Means for maintaining the equilibrium of aeroplanes.

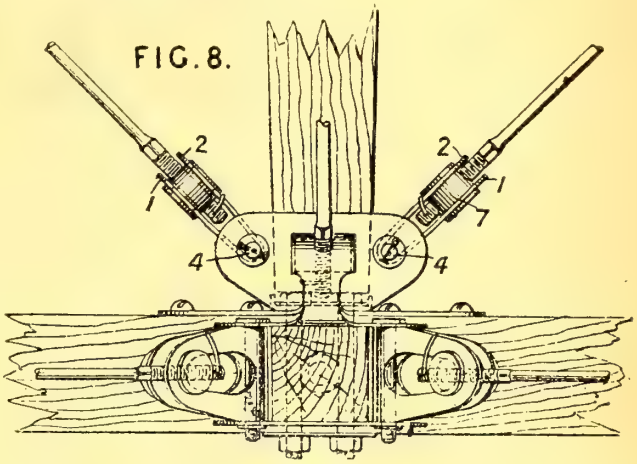
118,540. Dec. 29th, 1917. Jameson, J. Means for indicating the angular position or inclination of flying-machines, submarines, motor-vehicles, and the like relatively to the horizontal or vertical plane.

ABRIDGMENTS OF RECENTLY PUBLISHED SPECIFICATIONS.

116,984. Aeronautics. BLACKBURN AEROPLANE AND MOTOR CO., Olympia, and COPLEY, J. W., Wynberg, Fernville Avenue, Roundhay, both in Leeds.

FRAMEWORK.—A device for the attachment of bracing-wires, particularly in aircraft, comprises a sheet-metal blank bent to form two approximately parallel limbs 1, 2 in which slots 5, 6 are formed to take a trunnion 7 to which the bracing-wire is secured, preferably by screwing through a hole at right-angles to the axis of the trunnion. The trunnion has grooves 8, 9 engaging the outer ends of the slots to prevent splaying of the limbs 1, 2 and to prevent axial movement of the trunnion which is introduced through enlarged portions of the slots near the bent portion 3 and slid into position. The bent portion 3 may be made cylindrical and placed astride a pin 4 on the structure as shown in Fig. 8, or it may be flat and secured by bolts. More than one pair of slots may be made in a single bent plate to take additional trunnions.

FIG. 8.



117,092. Parachutes. CALTHROP, E. R., Eldon Street House, Eldon Street, London. (See Illustration below.)

In parachutes of the kind described in Specification 21312/14, means are provided for restricting the opening of the parachute until it has fallen clear of the aircraft from which it is launched. In the form shown in Figs. 1 and 2, the restricting-means comprises cords 10 connected to the rigging 3 and to a container 2, so that the spreading of the parachute is restricted by the cords 10, as shown in Fig. 2, until they become taut and break under the stress of the load. In modifications, the restriction is under the control of the pilot; for example, tongues 14, Figs. 3 and 4, attached to the periphery of the parachute 13 are lightly secured together by stripping pieces 15 connected to a cord 17 leading to the pilot; or a series of tapes may connect the periphery of the parachute to a central releasing-device under the control of the pilot. In order to prevent the sensation of a dead drop, frills 52, Fig. 14, may be attached to the rigging and a small parachute 54 may be added. Further, an auxiliary parachute 55 may be provided as described in Specification 105,944. Specifications 24594/14 and 8649/15 also are referred to.

MORE PARACHUTING.

The "Times" correspondent in France wrote on Sept. 11th:—

The enemy is still occasionally seen to make use of the parachute for escape from an aeroplane. In one case lately one of our patrols fell in with four Fokkers and wiped out the whole party clean. From one of the four, as it fell, the airman was seen to be pulled out by a parachute and land apparently in safety.

[Presumably after a few hundreds of the enemy have been saved in this way it will strike somebody on this side of the water that it is worth while to save British aviators.—Ed.]

FIG. 1.

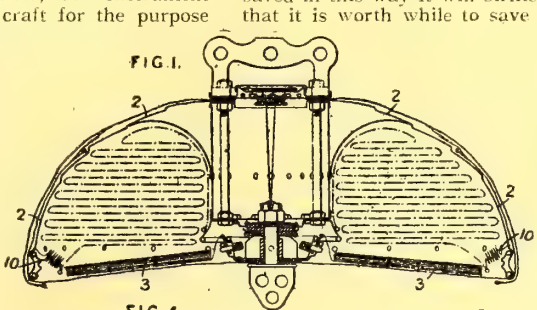


FIG. 4.

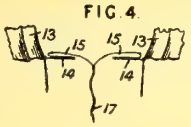


FIG. 3.

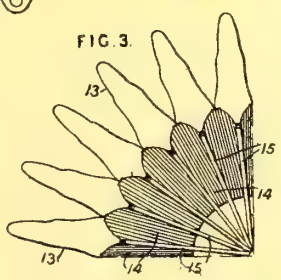


FIG. 14.

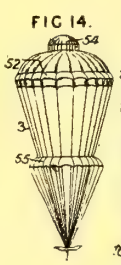
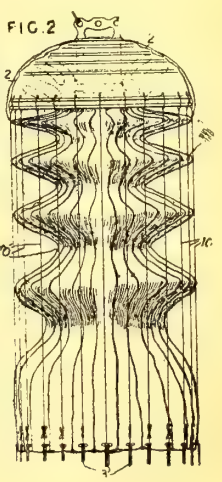
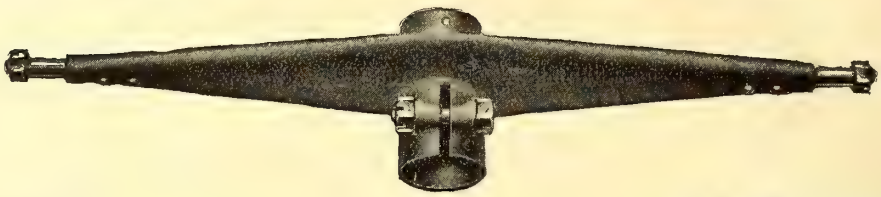


FIG. 2



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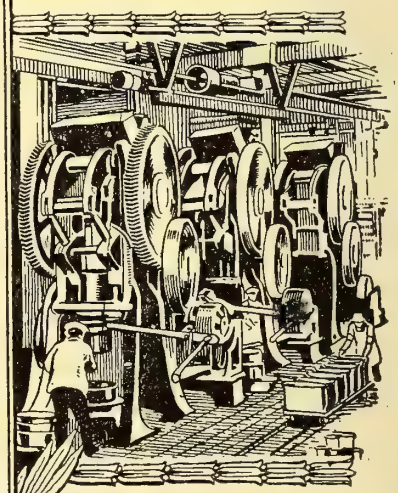
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THE AIRCRAFT TRADER

MARKET TOPICS.

Prices are for Quantities on usual Terms.

Sept. 12th.

COPPER.—The output of Copper appears to be increasing very nicely, and although the production is being affected, owing to the shortage of labour, it is expected that immediately the harvest is over, the situation will be much easier.

It comes as a surprise to learn that a prominent member of the U.S.A. War Industries Board has stated that sufficient supplies of Copper are in sight. One naturally assumes that he is making allowance for the needs of the Allies. In view of the huge and increasing demands of America, this statement is very reassuring. Of course, the reported scarcity of this metal may have been caused through some U.S.A. firms being unable to obtain supplies for work other than war requirements.

The position here continues to give satisfaction, and supplies are not difficult to obtain for war contracts.

TIN.—The Tin Control Authorities have issued the following notification :—

"An inter-Allied Tin Executive has been established to sit in London to control the price and distribution of Tin for the Allies."

Readers will no doubt remember this step has been advocated in these columns on two or three occasions as an effective scheme for eliminating speculation.

The Executive will control all purchases of Tin and Tin Ores by the Allies in all parts of the world, and the names of the members are as follows :—

Great Britain :—Sir L. W. Llewellyn, Mr. W. A. Tennant.
U.S.A. :—Mr. G. M. Armsby, Mr. John Hughes.
France :—Lt. Sauvage.
Italy :—Col. Riggi.
Secretary : Mr. H. A. Buck

Prices have been declining for over a fortnight, and are now over £12 less than they were a week ago, and £45 per ton less than the price ruling a month ago; and with the institution of centralised buying it is more than likely that the days of unreasonable speculative prices are past. Production is proceeding very favourably, and good quantities have arrived here recently. Speaking generally, the situation at present is much more satisfactory than it was a month ago.

Comparative Prices.

To-day, Sept. 11th	£344	0	0	per ton.
Sept. 5th	350	0	0	per ton.
Aug. 29th	361	10	0	per ton.
Aug. 7th	399	0	0	per ton.
Highest price, 1917	309	0	0	per ton.

LEAD.—This market is quite featureless. Supplies are fairly satisfactory and official prices remain unchanged.

STEEL.—The production of Steel is proceeding very satisfactorily, and ample supplies are available for aircraft constructors, one or two of the Special Steels required for engines are, however, a little more difficult to obtain. Supplies of High Speed Steels are also satisfactory.

Official prices remain unchanged.

TIMBER.—Fair quantities of Spruce have been received recently, and the Timber situation is a little easier than it was a couple of months ago. There is still room for economy as far as inspection is concerned, and large quantities of Timber could be saved by a more reasonable standard of inspection being maintained.

Fair supplies of Mahogany are available, but very little Walnut is obtainable. Supplies of manufactured Plywood continue to give satisfaction and the authorities have not yet taken control of this material.

Official prices are unchanged.

PURCHASE OF TIMBER.

The Board of Trade made the following announcement on Sept. 9th :—

The Board of Trade announce that, in order to meet the views of the trade, the amount of timber which may be purchased without a permit has been altered from £5 in any one week to £20 in any calendar month. The following is the text of the notice effecting this alteration :—

Pursuant to paragraph 1 of the Timber Control (Amendment) Order, 1918, notice is hereby given that from the date hereof (9th Sept., 1918) the amount of timber which may be purchased without a permit in accordance with paragraph 15 (a) of the Timber Control Order, 1918, shall be an amount not exceeding a total value of Twenty pounds in any one calendar month, and Form A. in the Schedule to the Timber Control Order, 1918, shall be varied accordingly as follows :—

"I hereby certify that the purchase entered against my name is correctly described and that it, together with any other purchases of timber made during the current calendar month (whether made directly or through third parties or from whatever source) without permit from the Controller of Timber Supplies, does not exceed £20 in total value, and that this purchase is for work of National Importance or urgent necessity."

THE "OLYMPIAN."

The August number of the "Olympian," the official organ of the Blackburn Aeroplane Co., contains many interesting articles, one of them being the episodes of a tourist caught in Switzerland at the outbreak of war. This account very ably depicts the difficulties which English travellers encountered in returning to England from neutral countries when war broke out.

The obituary on Maj. Mannock, D.S.O., M.C., R.A.F., and a short paragraph on a few incidents in the late Maj. McCudden's life do much to denote how the work of the active service aviator is appreciated by the people in the Aircraft Industry.

There is a good account in the magazine of an interesting lecture delivered by Capt. Cotterill, R.A.F., to the employees of the Blackburn Aeroplane Co. This R.A.F. officer gave examples of accidents to aeroplanes, caused through faulty workmanship, and particularly impressed upon the workers the urgent necessity for turning out faultless work.

Many other articles and stories appearing in this monthly journal make pleasing reading, especially the page devoted to domestic ideas, which, one is certain, will greatly appeal to the other sex.

GERMAN SHORTAGE.

One of the many signs indicating a shortage, both of machines and of trained flying personnel, in Germany, is to be found in the fact that, for the last three months, German pursuit flights have been much below their normal establishments. In many instances units with an establishment of 18 machines are reduced to a strength of only 12 machines.

Quoted below is a passage from an enemy document which recently fell into our hands that throws much light upon this shortage.

> In view of the present situation as regards raw material, our aeroplane industry is more and more reduced to relying on the working up of motors and instruments saved from destroyed aeroplanes. Thus the supply of material to the front has become essentially dependent on the return of waste material from the front.

ACETYLENE APPARATUS.

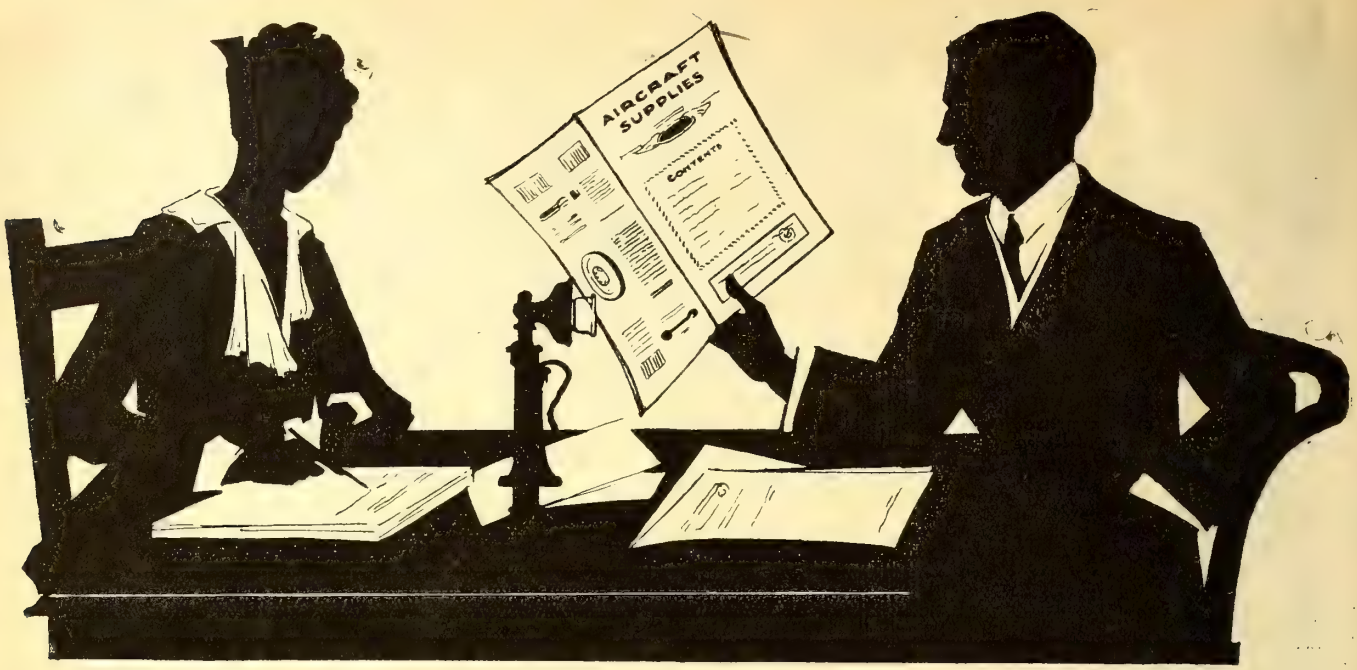
The Acetylene Corporation, Ltd., of 49, Victoria Street, Westminster, have issued a new list of their acetylene generating plant.

The oxy-acetylene outfit is in these days indispensable for welding purposes, and welding is used greatly in aircraft construction. A complete outfit consists of : Acetylene plant, blowpipe, oxygen pressure regulator, hydraulic back pressure valve, flexible tubing for conveying gases to blowpipe, goggles, cylinder key, feed wire or rod and fluxes and carbide and oxygen.

The Atoz A2 Acetylene Plant has been specially designed for the oxy-acetylene welding process. It is made of mild steel and galvanised after construction. The water supply control being fitted on the front, is readily accessible.

The whole series of Atoz plants are very compact. Working instructions are contained in the list, a copy of which can be obtained on application to the above address.

The sizes of the Atoz plant ranges from : No. 1, 4 ft. high, charge of carbide 6 lbs., output per hour 10 cubic feet, price £10, to No. 6, 8ft. 6 in. high, charge of carbide 72 lbs., output per hour 120 cubic feet, and price £46.—R.M.



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TRADE MARK ASCOL REGISTERED

AIRCRAFT FINANCE

CURRENT TOPICS.

Banks Will Move With the Times.

Without a doubt the British banks are preparing in a most promising fashion to take a more intimate and active participation in the commerce and industry of the country when peace returns. This is not merely idle gossip but actual fact, based on a knowledge of what is taking place, and new plans that are being discussed. It is to be hoped that success will result.

Present System at Fault.

Conditions have been changed materially by the war, and they are still changing, and those responsible for the conduct of our big banking institutions recognise that the old system of respectability and independent indifference has serious faults which will become manifest in the new order of things. Already, the experience gained during the past four years has been helpful in many ways, and it is the intention to make the most of this, and also to supplement it.

Vindicating the Amalgamations.

Critics, enamoured of the German system of Industrial banks, have often complained that British banking failed to stimulate trade to their utmost ability; their relation to industry was not so intimate as it might have been. There were certainly some faults: there are also faults in the German system, but the latter was unquestionably more helpful to trade. It must not be imagined, however, that the British banks will copy those of the Huns; but now that the amalgamation policy has resulted in mammoth banks, these must prove their merit not only to the advantage of the general public but also to the benefit of the shareholders; they are out to do so.

Confident Stock Markets.

Although markets have quietened a little, confidence is maintained in the Stock Exchange. Some prominence has been attained by shares associated with the Aircraft Industry, including Vickers, Armstrong-Whitworths and Birmingham Small Arms, the former at one time commanding the price of 52s., which compares with about 40s. when their position was discussed herein a few weeks ago. Armstrongs have been selling over 50s., which represents a substantial advance on the price recently ruling and B.S.As. are almost 85s.

Based Entirely on Possibilities.

Try to get real live facts in justification of these speculative outbursts, and the odds are that the attempt will be unsuccessful. The shares are being bought "on possibilities," which is a comprehensive phrase, but not really conclusive. It is, however, known that neither Vickers nor Armstrongs have published any accounts practically since the outbreak of war. This has not been possible, because of the inability to arrive at the liability of the Government for work executed. It does not call for much strain of one's imaginative faculties to be convinced that both concerns, which, by the bye, have not paid substantially large dividends, must have been piling up enormous profit.

Bonuses to Come.

Admittedly, all the additional business consequent upon the war has probably not resulted in an equally great expansion in profit, but the profits in the aggregate must have grown almost commensurately with the business. Some day, argue the speculators, the shareholders of Vickers and Armstrongs must be entitled to a portion of these extra profits, either in the shape of dividends, or in some other form.

Armstrongs New Capital.

To a slight degree the announcement that Armstrong, Whitworth and Co. propose to increase the capital by £2,500,000 damped the enthusiasm, the shares falling back to 48s. The new shares to be created will be Third Preference shares carrying, it is conjectured, a fixed dividend of about 6 per cent. Even if offered to holders of existing Ordinary shares these new securities will not provide much pecuniary benefit, hence the disappointment. But the enthusiasts who believe in the coming bonus are still confident.

Will Release Other Money.

This additional capital is required no doubt in connection with the many extensions, which have been provided partly out of money in hand and partly by the Government. Therefore, the new capital should release a lot of money that, owing to force of circumstances, has been sunk into the business instead of being kept liquid.

Napier's Active.

Activity has developed in Napier shares, originating in the knowledge that profits are expanding considerably and that the next dividend will be on a higher scale.

Humbers Dividend Hopes.

Interest has been reviving in Humbers, consequent upon expectations of a dividend being at last paid on the ordinary shares, which are now commanding over 24s. The financial year ends in April, and the results will be announced in a week or so. The company has not had a distinguished financial career, but the war has proved very helpful, and if the ordinary shares should remain dividendless it will prove a great disappointment.

Arrears Cleared Off.

At the same time, no one expects anything particularly brilliant in the way of a dividend. Out of the profits of the past three financial years it was possible on each occasion to pay two years' dividend on the preference shares, and thus, 12 months ago, the arrears were cleared off. Moreover, there was a balance of £55,400 remaining, and this was brought in to the credit of the past year's accounts.

What is Expected.

Of recent years the opportunity for strengthening the financial position by liberal provision out of profits has not been missed; it is a particularly sound policy in the case of an undertaking like Humbers, and, no doubt, will be pursued. This factor must be reckoned with in relation to dividend possibilities. However, with arrears of preference dividend no longer being a charge on profits, it does not seem unreasonable to look for at least 10 per cent. on the ordinary shares.

Value of the Shares.

Assuming this eventuates, the yield on the current market price would be 8 per cent. This is nothing very grand for a security of the company with such a poor financial record. Indeed, one would be wise in expecting a yield of at least 12 per cent. on one's money—on such a share. To produce such a return on the current market price the dividend must be 15 per cent. The 6 per cent. cumulative preference shares are purchaseable at 16s., thus representing a yield of 7½ per cent.

Ibbotson Bros.

Ibbotson Bros., the Sheffield Steel Company, have now published their annual report, but it is rather bald, because of the inability to arrive at a modus vivendi with the Authorities. The profit is shown as £22,700, being practically the same as that of the previous year, and the dividend is maintained at 10 per cent.

Big B.S.A. Bonus.

The fat bonus now offered to shareholders of the Birmingham Small Arms Co. is the materialisation of hopes created a few months ago in connection with the Daimler Co., which is an auxiliary. In addition to the usual 20 per cent. dividend and bonus there is to be distributed gratis a new share paid for out of the reserve fund. The present price of over £4 for existing shares is therefore justified.

A NEW COMPANY REGISTERED.

Grant Manufacturing Co., Ltd.—Private company. Registered Sept. 7th. Capital, £5,000 in £1 shares. Engineers, manufacturers and assemblers of aeroplanes, aeroplane parts, munitions, machinery and plant, thermal treaters of metals, annealers and hardeners of steel, iron and other metals and alloys, electrical, metallurgical and general engineers, chemical manufacturers, timber merchants, joiners, etc. The subscribers (each with one share) are:—R. E. Smith, 45, Hangingwater Road, Sheffield, engineer; E. W. Latham, 32, Hunter House Road, Sheffield, manufacturer. The first directors are to be appointed by the subscribers. Registered office: 48, North Church Street, Sheffield.

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Gill and Reigate, Ltd.—Equitable charge on two contracts for aeroplane spare parts, to secure all moneys due or to become due from company to Lloyd's Bank, not exceeding £10,000.

Meteor Motors, Ltd.—Particulars of £3,000 debentures created Aug. 21st, 1918, filed, the whole amount being now issued. Property charged: The company's undertaking and property, present and future, including uncalled capital. No trustees. The unissued shares of the company are to be issued to J. M. Strachan *inter alia* in consideration of his taking up this issue of £3,000 debentures.

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The British Mercédès Motor Co., Ltd., beg to announce that they have purchased the goodwill, plant, machinery, and stock-in-trade of Milnes-Daimler Mercédès, Ltd., and can supply all spare parts for all models of Mercédès Cars & Milnes-Daimler Lorries.

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S.B.A.C. THE SOCIETY OF BRITISH AIRCRAFT CONSTRUCTORS

C.D.C.

COMMERCIAL AERONAUTICS

THE SIGNIFICANCE OF ATLANTIC FLIGHTS.

By "Medway."

I have been studying carefully the views expressed editorially in The Aeroplane on the subject of flying the Atlantic, and have endeavoured to consider the proposed prize or competition from the point of view of post-war commercial developments.

By way of preliminary, I am not altogether convinced that a competition on the lines suggested would really result in improving the breed or accelerating the development of long-distance bombing aeroplanes with a special view to giving the inhabitants of Berlin a little practical experience of how it feels.

To take what is very likely a false analogy, there are occasions upon which during a cricket match, fifty runs made quickly will be worth much more than a hundred made slowly. Supposing such a situation were to arise, but prior to the match somebody had offered a big prize to the first man who put up a century, I am inclined to think that that prize would have a bad effect rather than a good one. The various batsmen out to win it would have been cultivating an ability to stick indefinitely on the principle that if only you stick long enough, the runs will come.

In other words, a competition encouraging a man or machine to hold out over a long distance or a long time may have altogether the wrong effect upon the ability of the man or machine to do something shorter and quicker. At the risk of an undignified scrap with our editor, in which, being merely a vulgar commercial person, I should get the worst of the argument, I suggest that a firm which set out to design a machine to cross the Atlantic would not be developing in the same direction as a firm which set out to design a long-distance bomber for the benefit of Berlin.

The two positions are similar, inasmuch as both require reliability and weight-carrying capacity. They differ materially, inasmuch as the Atlantic flight might perhaps be most easily performed by a machine designed to travel only at a distinctly moderate speed, whereas the bomber is more or less at the mercy of the enemy unless he has either very high speed or a very high ceiling.

I fancy that the Atlantic machine would not be built for big speeds, and would not be rigged for great heights, partly because the fuel consumption at great heights would be heavier. However, all this has little or nothing to do with me, and I shall probably be safer on what I may call my own ground.

Retiring to this position, I find a very strong reason for supporting some such competition as that suggested by the editor, even though I doubt its efficacy for the purpose for which it was suggested. In order to clear away all points of disagreement from the first, I may as well add that in my opinion it would be in some ways better to have the competition upon a circular route of the same aggregate mileage that would be involved for the Atlantic flight, but so selected that, in the event of anything going wrong, good men would not almost certainly lose their lives.

On the other hand, I agree that the Atlantic flight would be far more spectacular, and that very possibly the risk is worth taking owing to the enormous value to this country and its Aircraft Industry of the advertisement that would follow upon its success.

The Post-War Atlantic Machine.

It seems to me that the successful Atlantic machine would undoubtedly be also a very fine machine for post-war commercial purposes in most parts of the world. It would not be exactly the type for a London-to-Paris express service, but it would be the kind of thing that should be used in young countries for the early development of inland districts, and employed for mail and express passenger services where no rapid means of transport yet exists over long distances.

Particularly in mail work it would be invaluable where the only competitor is either the steamship or animal haulage. In such cases the saving of time effected by a moderately slow aeroplane would be adequate inducement for the establishment of the service without going still further and saving a few more hours by the use of higher speeds involving much higher costs. Also, as said already, the advertisement would be immense if this record were placed to the credit of the British Industry. It would be evidence that we had already created what the commercial community and Governments in all parts of the world will need directly the supply is freed and available, and it would probably bring orders which would keep all our principal aircraft constructors reasonably busy in the period immediately following the cessation of big Government contracts.

A Useful Precedent.

Now, as to the expenditure of time and money and material on the construction of machines for the Atlantic flight, it seems to me that we already have a precedent to prove that this is justifiable. Some time ago there was formed under the Ministry of Reconstruction a body known as the Engineering Trades (New Industries) Committee. The primary object was to encourage the development of industries which prior to the war had been inadequate, negligible, or non-existent.

The term "new industries" has, however, been fairly liberally construed. It is taken to include new types of machinery to be produced by established firms in pursuance of their normal policy of development and improvement. Working in connection with the committee mentioned are a large number of branch committees, each expert in some particular industry. One of these branch committees deals with motor vehicles and their accessories. Another deals with aircraft.

The Motor Committee has taken the view that the production of a new post-war model of a car is unquestionably a new industry. No manufacturer who stuck to his pre-war model would get business. He MUST design something fresh and better. This he ought to be able to produce directly he is free to do so.

Now it is obviously impossible to turn a factory straight onto the production of a new post-war model without first manufacturing a few experimental examples of that model, and testing them thoroughly under working conditions. Starting upon this basis, the Motor Committee has made inquiries as to the materials and other facilities, including labour and fuel, necessary to enable the various firms concerned to get through the experimental work that is a necessary preliminary to post-war business.

The view of the Motor Committee has been accepted by the main Engineering Trades Committee, and I gather from firms concerned that the applications for materials and facilities have been approved by the main Committee and the Ministry of Reconstruction, and that the necessary priorities and permits are now granted or about to be granted.

For the Benefit of the Industry.

All this seems to me to suggest a desirable course of action for the branch committee dealing with aircraft. Similar priorities and permits would enable aircraft manufacturers to go to work quietly on the production of experimental machines for post-war commercial work.

Some at least of these machines would be thoroughly suited for long-distance services, and would undoubtedly be entrants for the Atlantic competition. They have got to be tested somewhere, and thoroughly, before quantity production of the models involved could be seriously considered. The latter part of this test might just as well consist in participation in the trans-Atlantic competition as in anything else.

The Aircraft Industry has a right to demand the same facilities as are being already granted to the motor and other industries. The grant of these facilities would bring the trans-Atlantic aeroplane into existence during the next few months. This fact would then be demonstrated to the world by the competition suggested.

As already stated, I do not think that the main results would be directly applicable to the long-distance bomber, but undoubtedly some of the results would be of value in that connection, and modifications of the post-war models would probably get themselves heartedly disliked in Germany. Of course, if it turned out that the trans-Atlantic machine and the long-distance bomber were in fact identical, so much the better.

In that case, the manufacturers would already be gaining experience of quantity production of their post-war products before the war was over, and they would be able to go straight ahead with their permanent policy at the very first moment. Even if it unfortunately turned out that the types were somewhat different, they would at least be more or less allied, and the work of reorganisation upon the conclusion of the war would thus be simplified.

I suppose it will be argued that not even an hour ought to be spared from the work of producing machines simply and solely for military use. I imagine, however, that in this as in other industries even the best factory organisation cannot be so perfect as to keep every man busy for every moment of his working time.

For this reason, the production of experimental models is often possible without any reduction at all in war output.

It becomes purely a matter of getting a high priority for the materials to be used in the experimental work, and no labour needs to be diverted. The only other special requirement is a certain amount of fuel for testing purposes, but the quantity needed would, in the aggregate, be comparatively small, amounting altogether to only a few hours' fuel consumption of our aeroplanes in military service. Consequently, I suggest that the Aircraft Branch Committee should take up this matter immediately, circularising all the firms that might be interested, and obtaining from them statements of the materials and facilities necessary. These statements would then be scheduled and put forward to the Engineering Trades Committee, and I can hardly imagine that in view of established precedents there could be any refusal by that Committee or the other official bodies concerned, such as would render it impossible for the good work to go on.

Assuming the matter to go through on these lines, the trans-Atlantic competition, or a series of tests analogous to it, would follow as a matter of course, and if the competition were successful the whole British Industry would be established on a comparatively firm basis for after-war commercial developments.

THE U.S. AERIAL MAIL SERVICE AND OTHERS.

The aerial mail service between New York and Washington is now being carried out very much in earnest. At many of the post offices in New York there is a scheduled time for letters to be posted to go by aeroplane. The cost for this service at present is only 3 cents an ounce. 10 cents is added for special delivery service, and 3 cents regular postage, making 16 cents an ounce in all. As the volume of mail is increased, this rate will possibly be reduced.

The present rates are cheaper than telegraph and telephone rates, and the average time of transmission is much faster than train service. The rates are but little higher than straight special delivery service, but the time of transit is considerably less.

On July 10th, the aeroplane mail was carried from Washington to New York in 2½ hours, including the stop at Philadelphia. The average rate of speed was 90 miles per hour, and that between Philadelphia and New York was 108 miles per hour

Capt. B. B. Lipsner, who recently resigned his commission as a flying officer in the U.S. Army, has been appointed superintendent of the Aerial Mail Service of the Post Office Department, in charge of operations and maintenance. He assumed office on July 17th.

Concerning the possibilities of the service, Capt. Lipsner says that he will, inside of a limited time, have flying mail routes established between points that will actually save over two days, compared with the railway service.

A Sensible Congress.

Under an Act of Congress, the American War Department is instructed to turn over to the Post Office Department all flying machines that have been made unfit for war. With a large number of machines and a large flying personnel, the extension of the aerial mail service is practically unlimited.

The heaviest mail carried since the aerial service was established was delivered at Belmont Park on July 15th by Lt. Gordon Dodge, who had 11 sacks, weighing 251 lbs. This was quite a good performance; but, as time passes, machines will carry very much more than previously.

Costs.

The Post Office Department have authorised the issue of this first report on the cost of the Aerial Mail Service:—

"The first report of the comparative cost of the operation and maintenance of the Aero Mail Service shows that the aeroplanes used in this service have broken all records for economy of gasoline consumption.

"The total of all operating expenses of nine aeroplanes covering flights aggregating 7,234 miles, was about $3,682. The total consumption of gasoline representing 113 hours and 8 minutes of flying was 1,377 gallons, which is $32.50 per hour, something over 50 cents per mile. The total cost of gasoline was $405 in flying 7,234 miles.

"The best performance in flying was made by a Curtiss J.N.4 machine, which flew 26 hours and 40 minutes at a cost of $28.01 an hour, and covered 1,719 miles at a cost of 43½ cents per mile. An aeroplane equipped with an Hispano-Suiza 150 h.p. engine used approximately 8 gallons of gasoline per hour, and an aeroplane equipped with a —— motor used 17 gallons per hour. This shows 40 per cent. less gasoline consumed than generally required for aeroplane engines of these sizes.

"The calculation of operating cost includes departmental overhead charges, interest on investment, replacement of parts, deadhead time of mechanics, gasoline, lubricating oils, office force, motor-cycles and trucks, rent, fuel, light and telephone, pay of pilots, hangar men and mechanics.

"The average consumption of gasoline for the nine aeroplanes was 12 gallons per hour."

Both Cleveland and Chicago are being urged to ask for aerial mail lines and to establish aerodromes to facilitate the Aerial Mail Service. Arrangements are already being made for the extension of the service to other cities.

Aug. 17th closed the first week of operations of the Aerial Mail Service by the Post Office Department, with civilian aviators as pilots, and it proved a perfect week in the matter of trips.

The mishap to Aviator Maurice Newton's machine caused no delay in the delivery of the mails. He landed at Hillside, half a mile east of Jamaica, instead of at Belmont Park, but the Belmont Park Station sent a motor car to the scene of landing in time to send the mails to New York on time.

Taken on the whole the American aerial mail experiments have been a success, and one sees unlimited prospects of advancement in the future.

Enemy Efforts.

The enemy have been carrying out an aerial mail service between Vienna and Lemburg. It is understood that the machines carry mostly official dispatches, although private letters are accepted if franked with a special stamp for which the price is about four times the ordinary rate. The aeroplanes make the trip in about seven hours as compared with 17 hours by express train.

Other Aerial Mails.

France has an established aerial postal service, and it is understood that the Greek Government are going to establish an aerial mail between Athens and Salonika. Other towns, it is hoped, will be included later.

With many countries taking up the aerial mail idea, it is now high time that the British Government started on this new enterprise. It would simplify matters considerably if the Government would issue a notice as to what course they intend taking, otherwise at the time of the declaration of peace, England will be all behind other countries in commercial aeronautics.

A well-run aerial postal scheme opens up great commercial possibilties for aircraft, and the country with the greatest experience in aerial postal matters will have a big advantage over other countries which have not taken commercial aeronautical schemes seriously.—R.M.

CHICAGO—NEW YORK.

The "Times" correspondent writes from New York on Sept. 12th:—

The flight this week of Mr. Edward Gardner from Chicago to New York in one day has stimulated afresh interest in the plans for sending American aeroplanes through the air to England, and incidentally winning the "Daily Mail" prize. The Aviation Club of Chicago immedately after the receipt of the news of Mr. Gardner's landing near Belmont Park, New York, convened a meeting, at which the scheme was discussed for a long-distance race between aeroplanes furnished and manned by half-a-dozen of the leading cities of the United States, the winner of the race to attempt the first Transatlantic flight from America to the British Isles. In explaining the scheme, Mr. W. J. B. Strong, on behalf of the club, said to-day:—

We want to demonstrate the possibility of getting aeroplanes to the Western front under their own power. We know it is entirely feasible to make this flight now. The development of the multiple motor has removed the last great stumbling-block, the necessity of having to land if anything goes wrong with the motor.

Mr. Gardner made the journey from Chicago with only three stops. He started in blinding rain at 6.45 in the morning and landed at Belmont Park at 8.15 in the evening. Owing to the fact that the signal fires lit to guide him were not visible at 5,000 feet altitude, he was obliged to hover over the Park for half an hour, and finally to descend in an adjacent field with a slight mishap. Allowing for stops at Bryan (Ohio), Cleveland, and Loch Haven (Pennsylvania), Mr. Gardner's actual flying time for the 800 miles was 6 hours 40 minutes, or 120 miles an hour. He consumed 250 gallons of petrol and seven gallons of oil, and is extremely enthusiastic over the qualities of the Liberty motor, as demonstrated in this flight.

OFFICIAL INACCURACIES.

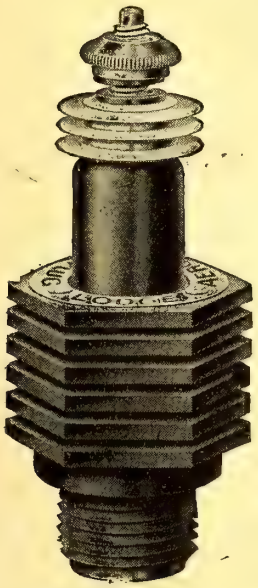
The following was communicated on Sept. 12th for publication in the Press:—

Chicago.—Flying a de Havilland machine with a Liberty motor, Lt. M. B. Kelleher, accompanied by State Senator A. Clark, flew to a height of 23,500 feet in connection with the war exposition programme. This is regarded as a world's record for flying with a passenger. The highest previous mark, made in England, was 21,000 feet. Official figures record an altitude of 24,000 feet in a single-seater in England.

[The compiler of the official communication is recommended to look again. Our pilots frequently fight German two-seaters at 25,000 feet in France, and that is by no means the British record either for single-seaters or two-seaters. If all our official war figures were as inaccurate as our aviation figures, one would not feel much confidence in official dicta.—Ed.]

LODGE

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TO DESIGNERS OF AIRCRAFT ENGINES.

It should be remembered that the sparking plug is an essential part of the engine.

Considerable improvement may be effected in the efficiency of the engine not only by the choice of a suitable sparking plug but also by placing it in the best position in the cylinder.

In normal engines the plug should be so situated that the sparking points are inside the combustion chamber itself, with the points flush with its inside surface. The plug should not be placed in a compartment separated from the combustion chamber.

The position for the plug should be such that the incoming gas impinges on the sparking points; and not so that the out-going gas heats up the points.

The plug should not be screwed into a deep recess, but as much of the exterior of the plug as possible should be exposed to the air draught.

In engines in which the cylinders are stationary, the nearer the plug can be placed to the vertical the better, so that oil tends to drain off the points.

ROTARY ENGINES.

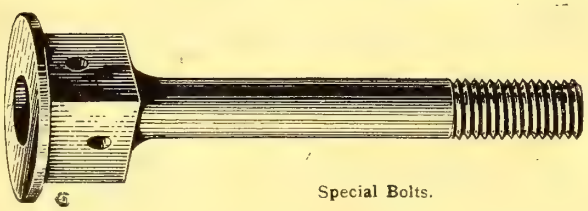
All except the last paragraph of the above applies equally to rotary engines. In those engines, in order to clear the oil from the sparking end of the plug, the plug should be inserted into the combustion chamber at such an angle that the terminal of the plug is nearer the centre of revolution than the sparking points. In this way (with a suitable plug) the oil will be thrown out by centrifugal force. It is sufficient if the axis of the plug makes an angle of 15 deg. with the tangent.

Aeroplane General Sundries Ltd.

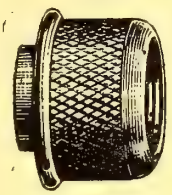
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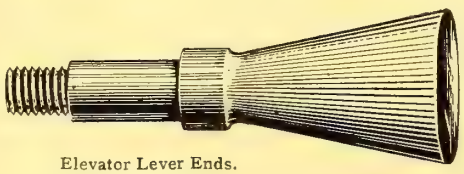
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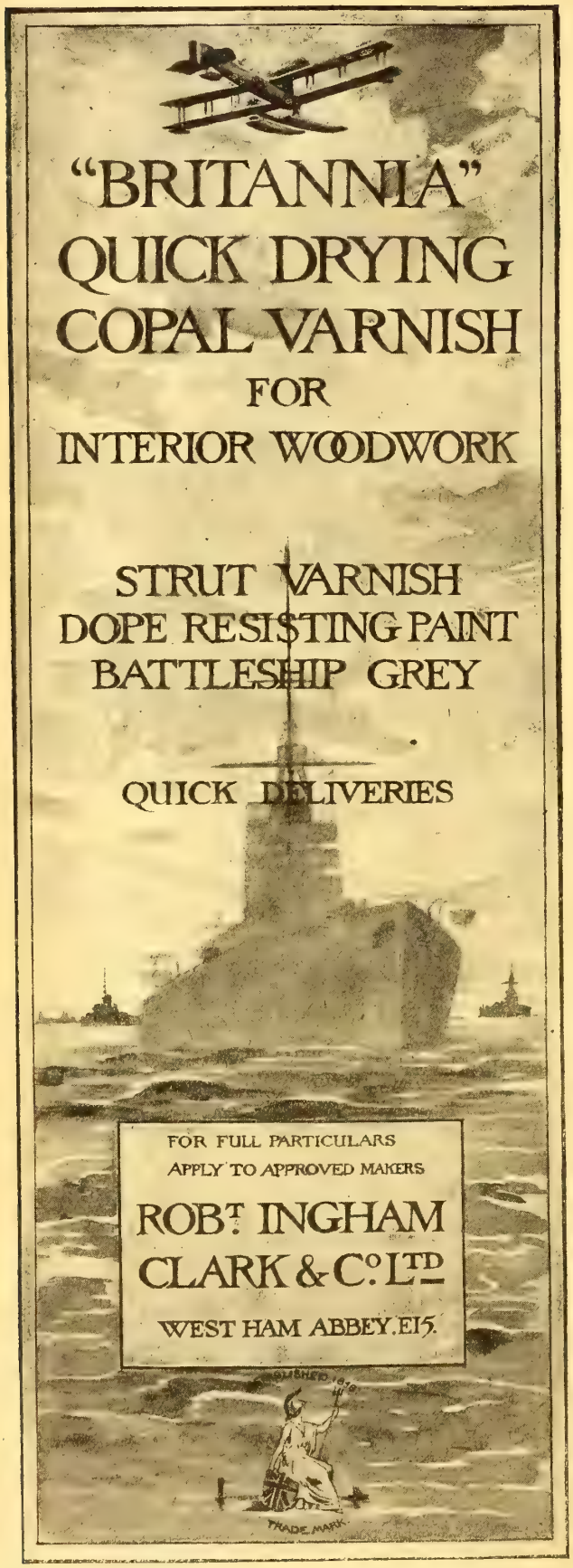
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is still allowed. In matters sartorial the R.A.F. is in a transitional state, and opinions are divided on the merits of the new blue. There may be further changes before the final decision. Meantime it is well to be on the safe side by adhering to the old pattern. For one thing there need be no waiting, as supplies are ample.



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Bedford Cord Breeches (with buckskin straps) from
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Cap and Badge, with one pair of Rank Bars.
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(Continued from page 1006.)

FOREIGN DECORATIONS.

The following Decorations have been conferred by the Allied Powers on officers and men of the British Naval Forces for distinguished services rendered during the war :—

His Majesty the King has given unrestricted permission to the officers and men concerned to wear the Decorations in question.

DECORATIONS CONFERRED BY THE PRESIDENT OF THE FRENCH REPUBLIC.

LEGION D'HONNEUR.

CHEVALIER.

Squad. Comdr. EDWIN R. MOON, D.S.O., R.N.A.S. (now Maj., R.A.F.).

DECORATIONS CONFERRED BY HIS MAJESTY THE KING OF THE BELGIANS.

CROIX DE GUERRE.

Flt.-Comdr. RICHARD B. MUNDAY, R.N.A.S. (now Maj., R.A.F.).

DECORATIONS CONFERRED BY HIS MAJESTY THE KING OF THE HELLENES.

ORDER OF THE REDEEMER.

COMMANDER.

Maj. (temp. Lt.-Col.) ROBERT GORDON, D.S.O., R.M.L.I. (now temp. Col., R.A.F.).

The appointment of Officer of this Order gazetted on June 26th, 1918, has been cancelled.

* * *

His Majesty the King has been graciously pleased to approve of the award of the Military Medal for bravery in the Field to the under-mentioned N.C.Os. and Men :—

12737 Serjt H. G. Howard, R.A.F. (N. Cerney).
402637 Air Mech., 2nd Cl., B. C. Rhodes, R.A.F., attd R.G.A. (Brixton).
55961 Air Mech., 2nd Cl., H. C. Thomas, R.A.F. (London).

WAR OFFICE, Sept. 16th.

His Majesty the King has been graciously pleased to approve of the following Awards to the undermentioned Officers and Warrant Officers, in recognition of their gallantry and devotion to duty in the Field :—

A BAR TO THE DISTINGUISHED SERVICE ORDER.

Temp. Sec. Lt. (Temp. Capt.) EDWARD MANNOCK, D.S.O., R.E., and R.A.F.

For conspicuous gallantry and devotion to duty. In company with one other scout this officer attacked eight enemy aeroplanes, shooting down one in flames. The next day, when leading his flight, he engaged eight enemy aeroplanes, destroying three himself. The same week he led his patrol against six enemy aeroplanes, shooting down the rear machine, which broke in pieces in the air. The following day he shot down an Albatros two-seater in flames, but later, meeting five scouts, had great difficulty in getting back, his machine being much shot about, but he destroyed one. Two days later, he shot down another twoseater in flames. Eight machines in five days—a fine feat of marksmanship and determination to get to close quarters. As a patrol leader he is unequalled.—(D.S.O. gazetted in the Gazette).

CANADIAN FORCE.

Maj. ALBERT DESBRISAY CARTER, D.S.O., New Brunswick, R., and R.A.F.

For conspicuous gallantry and devotion to duty as a fighting pilot. In three and a half months he destroyed thirteen enemy machines. He showed the utmost determination, keenness and dash, and his various successful encounters, often against odds, make up a splendid record.—(D.S.O. gazetted Feb. 18th, 1918.)

THE DISTINGUISHED SERVICE ORDER.

Temp. Capt. PETER CARPENTER, M.C., R.A.F.

For conspicuous gallantry and devotion to duty. He has destroyed nine enemy machines, and driven three down out of control. He has led forty-six offensive patrols. One one occasion twelve enemy aircraft were attacked, and on another he led two other machines against nineteen of the enemy, destroying six of them. He has at all times shown a magnificent example.

Temp. Sec. Lt. (Temp. Capt.) EDWARD MANNOCK, M.C., R.E., attd. R.A.F.

For conspicuous gallantry and devotion to duty during recent operations. In seven days, while leading patrols and in general engagement, he destroyed seven enemy machines, bringing his total in all to thirty. His leadership, dash and courage were of the highest order.

Temp. Capt. HENRY WINSLOW WOOLLETT, M.C., Gen. List, attd. R.A.F.

For conspicuous gallantry and devotion to duty during recent operations. In two days during three patrols he destroyed eight enemy machines, making his total twenty-two. His leadership, dash and courage were of the highest order.

A SECOND BAR TO THE MILITARY CROSS.

Temp. Capt. WILLIAM GEORGE BARKER, D.S.O., M.C., Gen. List and R.F.C.

For conspicuous gallantry and devotion to duty. When leading patrols he one occasion attacked eight hostile machines, himself shooting down two, and on another occasion seven, one of which he shot down. In two months he himself destroyed four enemy machines and drove down one, and burned two balloons.—(M.C. gazetted Jan. 10th, 1917.) (Bar to M.C. gazetted July 18th, 1917.)

Temp. Capt. GERALD ERNEST GIBBS, M.C., R.A.F.

For conspicuous gallantry and devotion to duty. While on patrol he engaged and pursued a hostile two-seater. After repeatedly diving on the enemy machine, the hostile observer waved a white flag and was allowed to land. He landed beside it and took both occupants prisoner and the machine intact. Later, he encountered two enemy scouts and a two-seater. The scouts fled, and after a prolonged fight, he shot down and crashed the two-seater, both occupants being killed. He has given repeated examples of skill, determination and pluck, and has accounted for ten enemy machines. (M.C. gazetted March 26th, 1918.) (Bar to M.C. gazetted June 22nd, 1918.)

Lt. (Temp. Capt. JOHN GILMOUR, D.S.O., M.C., A. and S. Highrs. and R.A.F.

For conspicuous gallantry and devotion to duty in his leadership of offensive patrols. This officer has lately successfully engaged seven enemy machines, destroying five and shooting down two out of control. He has done splendid service. (M.C. gazetted May 26th, 1917.) 1st Bar gazetted July 20th, 1918.)

FROM THE COURT CIRCULAR.

WINDSOR CASTLE, Sept. 11th.

The King, attended by the Gentlemen in Waiting, went to London this morning.

His Majesty held an Investiture in the Quadrangle of Buckingham Palace.

The following were severally introduced into the presence of His Majesty, when The King invested them with the Insignia of the respective Divisions of the Orders into which they have been admitted :—

A BAR TO THE DISTINGUISHED SERVICE ORDER.—Lt.-Col. Redford Mulock, R.A.F.

THE DISTINGUISHED SERVICE ORDER AND THE MILITARY CROSS.—Maj. Wilfrid Snow, R.A.F.

THE DISTINGUISHED SERVICE ORDER.—Maj. Oliver Villiers, R.A.F.

His Majesty then conferred decorations as follows :—

THE DISTINGUISHED SERVICE CROSS.—Maj. Arthur Gaskell, R.A.F.; Capt. Frederick Mills, R.A.F.

A SECOND BAR TO MILITARY CROSS.—Capt. James Hibbert, S. Lancs. Regt., attd R.A.F.

THE MILITARY CROSS.—Capt. George Lloyd, R.A.F.; Capt. Herbert Openshaw, E. Surrey Regt, attd R.A.F.; Lt. Edward Batchelor, R.A.F.; Lt. Frederick Grace, R.A.F.; Lt. Lawrence Mawby, R.A.F.; Lt. George Murray, R.A.F.; Lt. Leslie Robinson, R.A.F.

OFFICIAL COMMUNIQUES.

NAVAL.

ADMIRALTY COMMUNIQUÉS.

SEPT. 10th.—Operations by R.A.F. contingents working with the Navy during the period Sept. 1st to 7th, have been considerably hampered by unsuitable weather conditions.

Submarine shelters and workshops at Bruges Docks have been attacked on four occasions, direct hits being obtained. Ostend Docks and the Coastal Motor Boat Depot at Blankenberge were also attacked with good results, and a large fire was started.

Enemy mine-sweepers were also harassed with bombs and machine-gun fire.

Over 14 tons of bombs were dropped by day-bombing squadrons.

One machine failed to return.

In engagements with hostile aircraft 10 machines have been brought down and 9 driven down out of control.

Three of our machines are missing.

In Home waters anti-submarine and convoy patrols have been maintained. Submarines have been sighted and attacked, and enemy mines located and destroyed.

MILITARY.

G.H.Q. COMMUNIQUÉS.

SEPT. 10th, 7.30 p.m.—On Sept. 9th low clouds and rain-squalls made the weather most unsuitable for flying. Our artillery machines persisted in their work whenever an opportunity offered. There is nothing else of interest to report.

Flying was impossible at night.

SEPT. 11th, 7.37 p.m.—Owing to continued and heavy rainstorms on Sept. 10th, aerial observation was very difficult.

In spite of a very high wind some work was accomplished during the fine intervals which occurred from time to time. Several reconnaissances were carried out by our machines and some photographs taken.

One of our aeroplanes failed to return.

SEPT. 12th, 8.10 p.m.—Frequent rainstorms and high wind severely limited flying operations on Sept. 11th, and there is nothing of interest to report.

SEPT. 13th, 8.10 p.m.—On Sept. 12th strong wind, low clouds, and heavy rain prevailed throughout most of the day. Enemy aircraft were not active. Our own machines engaged on contact patrol and artillery observation work had to contend with most unfavourable weather conditions and could only fly at a low altitude. During brighter intervals, reconnaissances were successfully carried out.

One of our machines is missing.

At night no flying was possible.

SEPT. 14th, 7.35 p.m.—On Sept. 13th clouds and rain again much interfered with operations in the air. During brighter intervals a number of photographs were taken, and our machines observed whenever possible for artillery fire. Contact patrol work had to be carried on at a very low altitude.

One enemy machine was brought down in air fighting during the day and two more were driven down out of control. At night two hostile night-bombing machines were brought down.

Ten tons of bombs were dropped by us in the course of the 24 hours.

All our machines employed during this period have returned.

SEPT. 15th, 7.30 p.m.—On Sept. 14th enemy aircraft showed more activity on some parts of the British front than for several days past.

In air fighting, four hostile machines were destroyed. In addition, two enemy two-seaters were burnt on the ground in the course of a successful attack carried out by our airmen from a very low height upon an aerodrome south of Lille. Four German balloons were shot down in flames.

Two of our machines are missing.

A good deal of photography and artillery observation work was accomplished, together with a number of contact patrols.

The weight of bombs dropped by us during the 24 hours amounted to nearly eight tons.

SEPT. 16th, 7.42 p.m.—On Sept. 15th, with the improving weather, there was a marked increase of aerial activity.

Enemy machines were encountered in large formations on the German side of the line, and there were many combats. Twenty-nine hostile aeroplanes were destroyed in air fighting during the day, and seven were driven down out of control. In addition, a large enemy night-bombing machine was brought down after dark.

Sixteen of our machines are missing, including two night-flying aeroplanes.

Four enemy aerodromes were sucessfully attacked and heavily bombed, one by day and three by night. During the 24 hours 30 tons of bombs were dropped by us.

Our balloons took advantage of the clear atmosphere to send down many useful observations, and our aeroplanes, engaged in reconnaissance, photography, and observation for artillery fire, carried out much valuable work.

AIR FORCE.

AIR MINISTRY COMMUNIQUÉS.

The following dispatches have been received from the Headquarters of the R.A.F. Independent Force in France :—

SEPT. 12th.—In spite of strong wind several attempts were made to bomb targets along this front. Bombs were dropped on the railway at Courcelles, and direct hits were obtained on the track. The village of Verny (near Courcelles, both places south-east of Metz) and the railway west of it were also bombed with good results.

SEPT. 13th.—In conjunction with the attack of the American First Army, the railways at Metz-Sablon and Courcelles were heavily bombed by us with good results. Metz station searchlights, and transport were attacked with machine-gun fire.

On the 13th inst., in favourable weather, operations were continued against Metz-Sablon, other railway junctions, and enemy transport on the battle front. Nearly 7¼ tons of bombs were dropped and good results were observed. One hostile machine was destroyed.

Two of our machines are missing.

SEPT. 14th.—In conjunction with the attack by the American First Army, the following were carried out :—

On the 13th inst., in addition to the bombing reported in yesterday's communiqué, nearly a ton of bombs were dropped on the railways at Arnaville and Metz-Sablon. Two enemy aircraft were shot down out of control. On the night of the 13th-14th attacks were carried out on the railway at Courcelles, but, owing to the weather, results were difficult to observe.

To-day the railways at Metz-Sablon and Ehrang (north of Trèves) and Bühl (south-west of Baden) aerodrome were attacked with good results. Three direct hits were obtained on the railway at Ehrang and on a shed on Bühl aerodrome.

Nearly six and a-half tons of bombs were dropped during the day and night.

One of our machines is missing.

SEPT. 15th.—On the battlefront, in addition to the bombing reported in yesterday's communiqué, the following bombing was carried out :—

Two further attacks were made on Metz-Sablon in the late afternoon, and many direct hits were obtained on the railway triangle, on the workshops, the gasworks, and the barracks. Boulay aerodrome was also attacked with good results.

On the night of the 14th-15th heavy attacks were kept up throughout the night on Metz-Sablon, Courcelles, Ehrang, Saarbrücken, Kaiserslautern, and the aerodrome at Frescaty and Boulay. Many direct hits were obtained on the railways, especially at Metz-Sablon and Courcelles, and several fires were caused at Metz, Kaiserslautern, Saarbrücken station, and Frescaty aerodrome.

Three of our machines failed to return.

This morning the railway triangle at Metz-Sablon was again attacked, and many direct hits were obtained. Enemy scouts were active.

Bombs were also dropped on Bühl aerodrome.

Three of our machines are missing

To-day the Daimler works at Stuttgart were also attacked with good results. During this raid 20 enemy aircraft were encountered and two destroyed.

Our machines all returned safely.

The total weight of bombs dropped during the 24 hours was over 27 tons.

SEPT. 16th.—On the battle front, on the night of the 15th-16th inst., four hostile aerodromes were heavily and repeatedly attacked by our machines with excellent results. Four fires were started, three hostile machines on the ground were wrecked, two hangars were completely demolished, and several more hangars received direct hits. A transport convoy was hit four times

The railways at Metz-Sablon were again bombed and a fire started. The railway junction at Mainz (north of Mannheim) and the docks and sidings at Karlsruhe were successfully attacked. Very good results were observed on both targets, and at Karlsruhe, where 3½ tons of bombs were dropped, 17 direct hits were obtained.

During the night 350 bombs, totalling 16½ tons in weight, were dropped.

All our machines returned.

THE CASUALTY LIST.

NAVAL.

Reported Sept. 13th.

PREVIOUSLY REPORTED MISSING, NOW PRESUMED KILLED.—Blyth, Flt. Sub-Lt. R. A., R.N.
Morris, Flt. Sub-Lt. E., R.N.
Williams, Flt. Sub-Lt. F. T. P., R.N.
Wilmot, Flt. Sub-Lt. W. H., R.N.
Budd, Flt. Sub-Lt. V. J., R.N.

MILITARY.

Reported Sept. 11th.

AUSTRALIAN FORCE.—DIED OF WOUNDS.—Keay, Sec. Lt. S. P., F.C.
CANADIAN FORCES.—ACCIDENTALLY KILLED.—LeLievre, Lt. R. H., Que. R., attd. R.A.F.
Tremblay, Lt. A. J., W. Ont. R., attd. R.A.F.

Reported Sept. 14th.

AUSTRALIAN IMPERIAL FORCE.—ACCIDENTALLY KILLED.—Fry, Sec. Lt. S. C., F.C.
DIED.—Ebeling, Lt. C. R., F.C.
CANADIAN FORCES.—WOUNDED.—Carr, Lt. G. I., Alta. R., attd. R.A.F.; Travis, Lt. F. P. J., Que. R., attd. R.A.F.
MISSING.—McElroy, Lt. V. H., Can. Eng., attd. R.A.F.

Reported Sept. 16th.

AUSTRALIAN IMPERIAL FORCE.—ACCIDENTALLY KILLED.—Cummings, Sec. Lt. R. L., F.C.
Parkes, Sec. Lt. W., F.C.
Scott, Lt. C. W., F.C.
CADETS ACCIDENTALLY KILLED.—Jefferys, E. H., F.C.
Pillow, R. N., F.C.
WOUNDED.—Edols, Sec. Lt. R. T., F.C.
PREVIOUSLY REPORTED WOUNDED, NOW REPORTED NOT WOUNDED.—Howard, Sec. Lt. F., F.C.

* * *

The following soldiers, who were prisoners of war in Germany, have arrived in Switzerland for internment :—

R.F.C.—Conlin, 106942 P.; Everix, 3217 M. H.; Guyat, 36287 J. G.; Hoggard, 49929 T. H.

Reported Sept. 17th.

The following officers, who were prisoners of war in Germany, have now arrived in England :—

Leckler, Sec. Lt. A. N., R.F.C.; Ordish, Sec. Lt. B. W. A., R.F.C.; Snook, Capt. C. W., R.F.C.

* * *

CASUALTIES AMONG WT. OFFICERS, N.C.OS. AND MEN.
THE DATES ARE THOSE OF THE OFFICIAL LIST
AUSTRALIAN IMPERIAL FORCE.
DIED.

SEPT. 2nd.—F.C.—Cubbins 2494 L. G.

AIR FORCE.

Reported Sept. 11th.

KILLED.—Bird, Lt. F. V., R.A.F.
Fothergill, Lt. W. T., R.A.F.
Stubley, Sec. Lt. L. M., R.A.F.
Wase, Lt. J. E., R.A.F.
DIED OF WOUNDS.—Bradbury, Sec. Lt. D., R.A.F.
DIED.—Beirne, Sec. Lt. W., R.A.F.
DROWNED.—Brownrigg, Lt. T., R.A.F.
WOUNDED.—Bateman, Lt. C. B., R.A.F.; Beck, Lt. T., M.C., High. L.I. and R.A.F.; Blake, Sec. Lt. W. T. C., Glouc. R. and R.A.F.; Chadwick, Lt. A. W., R.A.F.; Chapman, Sec. Lt. P. K., Suff. R., attd. R.A.F.; Emden, Capt. C. S., R.A.F.; Hood, Lt. H., R.A.F.; Kilby, Sec. Lt. F. D., R. War. R. and R.A.F.; Leslie, Sec. Lt. C. S., R.A.F.; Weller, Sec. Lt. E. G., R.A.F.; Whipple, Sec. Lt. S. H., R.A.F.
PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Arnold, Sec. Lt. J., King's (Lpool. R.), attd. R.A.F.
Ballance, Sec. Lt. G., R.A.F.
Brown, Sec. Lt. J. L., R.A.F.
Carr, Lt. R. G., R.A.F.
Castle, Lt. G. L., R.A.F.
Cocking, Sec. Lt. L. G., R.A.F.
Doe, Lt. J. E., R.A.F.
Eaton, Lt. C., R.A.F.
Elvin, Sec. Lt. A. J., R.A.F.
Garrett, Lt. A. L., R.A.F.
Hall, Lt. K. W. J., R.A.F.
Jenyns, Sec. Lt. C. G., R.A.F.
Jones-Lloyd, Lt. O. J. F., R.A.F.
Nicholas, Sec. Lt. E. M., R.A.F.
Pontin, Lt. S. C. M., R.A.F.
Purry, Capt. R. O., R.A.F.
Rickett, Sec. Lt. W. H. A., R.A.F.
Smith, Lt. J. L., R.A.F.
Sydie, Lt. J. E., R.A.F.
Tatnall, Sec. Lt. E. W., R.A.F.
Turner, Sec. Lt. E. G., R.A.F.
Turner, Sec. Lt. W., R.A.F.
Webster, Lt. J., R.A.F.
Wilson, Lt. W. K., R.A.F.
Woodman, Sec. Lt. K. C. B., R.A.F.
Whyte, Sec. Lt. R. P., R.A.F.
PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONERS OF WAR.—Cobbin, Sec. Lt. A. J., R.A.F.
Jones, Lt. A. D. R., R.A.F.
CADETS KILLED.—Dunn, A.
Galloway, R. K.
Hepburn, A. A.
Scott, S. A.
Scribbens, W. H.
Squire, L. P.
Wiltshire, C. E.

Reported Sept. 13th.

KILLED.—Cunningham, Sec. Lt. J. B., R.A.F.
Hojel, Sec. Lt. J. G., R.A.F.
Lavington, Sec. Lt. L. J., R.A.F.
Melvin, Sec. Lt. W. S., Rif. Brig. and R.A.F.
Moorhouse, Sec. Lt. W., R.W. Kent R. and R.A.F.
Shirlock, Sec. Lt. C. E., R.A.F.
DIED OF WOUNDS.—Hobbs, Sec. Lt. T. G., R.A.F.
WOUNDED.—Appleby, Sec. Lt. J., R.A.F.; Gosling, Sec. Lt. R. N., R.A.F.; Goudie, Lt. M. H., R.A.F.; Holling, Sec. Lt. J. M., R.A.F.; Horton, Sec. Lt. C. R. R., R.A.F.; Johnson, Sec. Lt. J. W., R.A.F.; Legg, Lt. V. C., R.A.F.; Manby, Lt. A. W., R.A.F.; Powell, Sec. Lt. F., R.A.F.; Ritchie, Sec. Lt. G., R.A.F.; Sharpe, Sec. Lt. E. W. C., R.A.F.; Spence, Lt. L. G. B., R.A.F.; Storey, Sec. Lt. G., R.A.F.; Swales, Lt. A., R.A.F.; Thornton, Sec. Lt. W. H., R.A.F.; Toomey, Sec. Lt. M. A., R.A.F.; Whalley, Sec. Lt. R. W., R.A.F.
MISSING.—Amos, Sec. Lt. J., R.A.F.; Borrowman, Sec. Lt. J. J., R.A.F.; Caldwell, Sec. Lt. J., R.A.F.; Collis, Sec. Lt. T. B., R.A.F.; Cuthbert, Lt. J. B., R.A.F.; Edwards, Lt. C. G., R.A.F.; Gill, Lt. C. E. G., R.A.F.; Heaver, Sec. Lt. A. R., R.A.F.; Johnson, Lt. T. A., R.A.F.; Lewis, Lt. W. T. S., R.A.F.; Mollison, Lt. J., R.A.F.; Newey, Sec. Lt. T., Leic. R. and R.A.F.; Parnell, Sec. Lt. E. A., R.A.F.; Pim, Lt. T., R.F.A. and R.A.F.; Viveash, Sec. Lt. A. J., R.A.F.
CADETS KILLED.—Hewson, A. D.
Jennings, C. J.
Jonnston, M. J.
Kirwan, M. W.
McIlhargey, C.
Webbor, A. H.

Reported Sept. 14th.

KILLED.—Blumdell, Lt. G. A. R.A.F.
Dillon, Sec. Lt. W. H., R.A.F.
Pepper, Sec. Lt. E. H., R.A.F.
Pither, Capt. C. E., R.A.F.
DIED OF WOUNDS.—Fox, Sec. Lt. W. R. S., R.A.F.
Keen, Lt. S. W., M.C., Lond. R.
Kirwan, Lt. L., S. Lan. R., attd. R.A.F.
WOUNDED.—Bentley, Lt. A. O., R.A.F.; Devitt, Sec. Lt. L. K., R.A.F.; Evans, Lt. R. J., R.A.F.; Fox, Sec. Lt. H. J., R.A.F.; Kier, Sec. Lt. J. N., R.A.F.; Knee, Sec. Lt. B., R.A.F.; Lawrence, Sec. Lt. H., R.A.F.; Mahony, Lt. M. F. J. R., R. Innis. Fus. and R.A.F.; Onions, Sec. Lt. A., R.A.F.; Puckle, Capt. H., Leic. R. and R.A.F.; Watterson, Lt. H. R., R.G.A. (S.R.) and R.A.F.
MISSING.—Bennett, Lt. L., R.A.F.; Bridge, Sec. Lt. C. H. A., R.A.F.; Bunbury, Capt. T. St. P., R.F.A. and R.A.F.; Crookell, Sec. Lt. S. E., R.A.F.; Goodhugh, Sec. Lt. P. H., R.A.F.; Jackson, Sec. Lt. W. R., R.A.F.; Leighton, Lt. K. A. W., R.A.F.; Louden, Capt. L. G., R.A.F.; Luard, Sec. Lt. R. B., R.A. and R.A.F.; Macfarlane, Lt. W. K., R.A.F.; Ormerod, Sec. Lt. W., R.A.F.; Pike, Sec. Lt. H. G., R.A.F.

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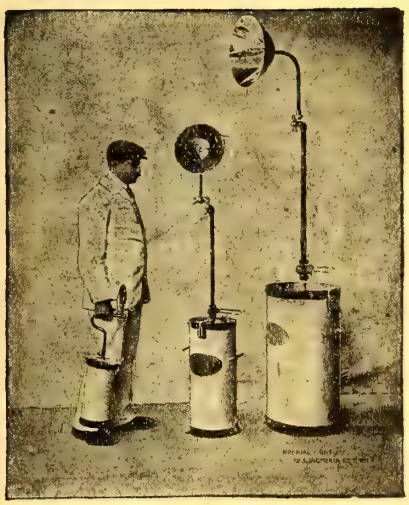


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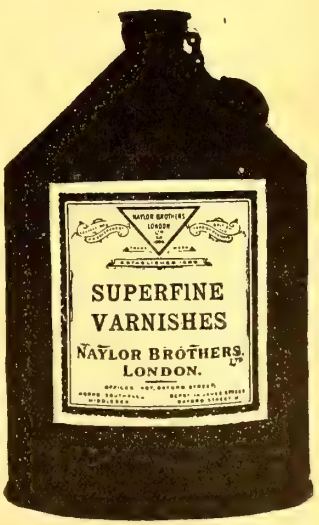
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CADETS KILLED.—Duval, J. T.
Eunson, J. T.
Litchfield, R. W. R.
O'Leary, H. B.
Paul, H. F.
Winnet, W. H.

Reported Sept. 16th.

KILLED.—Booth, Sec. Lt. S. C., R.A.F.
Carpenter, Sec. Lt. E. E., R.A.F.
Case, Sec. Lt. S. F., R.A.F.
Child, Capt. J. M., Manch. R. and R.A.F.
Clark, Sec. Lt. G. W. F., R.A.F.
Hampton, Lt. F. A. F., Northd. Fus. and R.A.F.
Hayward, Sec. Lt. F. R., R.A.F.
WOUNDED.—Adamson, Lt. J., R.A.F.; Aldridge, Lt. A. L., R.A.F.; Aslin, Lt. R. L., Lond. R. and R.A.F.; Bishop, Sec. Lt. A. J., R.A.F.; Bradbury, Lt. G., R.A.F.; Brandon, Sec. Lt. T., Durh. L.I., attd. R.A.F.; Burke, Sec. Lt. D. C., R.A.F.; Cogan, Sec. Lt. J. A., R.A.F.; Cook, Sec. Lt. F. C., Bed. R. and R.A.F.; Cowie, Sec. Lt. W. A., R.A.F.; Cowper-Coles, Lt. S. W., A.S.C. and R.A.F.; Frederickson, Lt. F., R.A.F.; Garside, Sec. Lt. A. J., R.A.F.; Hall, Sec. Lt. J., R.A.F.; Howard-Brown, Lt. J., N. Staffs. R., attd. R.A.F.; Locke-Waters, Lt. E. A., R.A.F.; Pentland, Capt. A. A. N., M.C., D.F.C., R.A.F.; Sandys-Winsch, Lt. A. E., R.F.A. and R.A.F.; Wallace, Sec. Lt. M., R.A.F., Walton, Sec. Lt. R. G., R.A.F.
MISSING.—Barritt, Lt. G. L., Linc. R. and R.A.F.; Boys, Sec. Lt. R. H. G., R.A.F.; Challis, Sec. Lt. M. E., R.W. Kent R. and R.A.F.; Clarke, Sec. Lt. H. W., R.A.F.; Cockin, Sec. Lt. J. B., R.A.F.; Coles, Sec. Lt. G. T., R.A.F.; Cowgill, Sec. Lt. W. A. F., R.A.F.; Dugdale, Sec. Lt. J. G., R.A.F.; Gardener, Sec. Lt. C. F., R.A.F. Grant, Capt. R. C., Sco. Rif and R.A.F.; Hall, Sec. Lt. W. A., R.A.F.; Hamilton, Sec. Lt. D. S., R.A.F.; Martin, Sec. Lt. D. A., R.A.F., Peeling, Sec. Lt. H. V., R.A.F.; Pope, Lt. R. A. B., M.C., M.G.C., and R.A.F.; Rose, Sec. Lt. D., R.A.F.; Scharff, Sec. Lt. R. L., R.A.F.; Scrivener, Sec. Lt. H. A., R.A.F.; Sinclair, Sec. Lt. D. B., R.A.F.; Strathearn, Lt. W. M., R.A.F.; Stringer, Sec. Lt. J. S., R.A.F.; Wormald, Sec. Lt. W. M., R.A.F.; Young, Lt. G. F., R.A.F.
CADETS KILLED.—Bender, C. A.
Hamar, R. C.
Leblanc, E. P.
Miller, H. S.
Rosenthal, S.
Saunders, J. F.

Reported Sept. 17th.

KILLED.—Hall, Sec. Lt. J. H., Lancs. Fus. and R.A.F.
Jameson, Lt. J. B., R.A.F.
McFarlane, Sec. Lt. A., R.A.F.
Morris, Capt. J. F., M.C., R.A.F.
Palmer, Lt. A. B., R.A.F.
Scrace, Lt. J., Buffs, attd. R.A.F.
DIED OF WOUNDS.—Urinowski, Sec. Lt. A., R.A.F.
DIED.—Spencer, Sec. Lt. T. K., R.A.F.
WOUNDED.—Arnott, Sec. Lt. A. D. M., R.A.F.; Bolitho, Lt. S. J., R.A.F., Clemshaw, Sec. Lt. C. W., Essex R. and R.A.F.; Davidson, Sec. Lt. F., R.A.F.; Forbes, Sec. Lt. A. J., R.A.F.; Gibbs, Lt. S., R.A.F.; Goring, Sec. Lt. A. J., R.A.F.; Greasley, Sec. Lt. W. S., R.A.F.; Hodgson, Lt. G., R.A.F.; Marsh, Sec. Lt. L. R., R.A.F.; McAslam, Sec. Lt. J., High. L.I. and R.A.F.; McFadden, Sec. Lt. H. S., R.A.F.; Metcalf, Sec. Lt. A., Glouc. R. and R.A.F.; Mitchell, Lt. J. A., R.A.F.; Morrison, Sec. Lt. R., R.A.F.; Mould, Lt. H. A. H., Northd. Fus. and R.A.F.; Nolan, Sec. Lt. T., R.A.F.; Phillips, Lt. L. H., R.A.F.; Potts, Sec. Lt. J. T., R.A.F.; Salter, Capt. E. J., R.A.F.; Sharp, Sec. Lt. L., R.A.F.; Stewart, Sec. Lt. J. K., R.A.F.; Waine, Sec. Lt. C., R.A.F.; Wilson, Sec. Lt. H. H., R.A.F.; Lindsay-Young, Capt. L. H. L., R.A.F.
MISSING.—Herriot, Sec. Lt. W. M., K.L.R. and R.A.F.; Raymond, Sec. Lt. L. B., A.S.D., attd. R.A.F.; Robinson, Sec. Lt. F. B., R.A.F.; Rochford, Sec. Lt. S. W., R.A.F.; Wallace, Sec. Lt. K. H., R.A.F.
CADETS KILLED.—Byrnes, J. A
Crozier, G. C.
Harvey, A. E.
Laird, A. B.
Robson, J.
Weir, H. R.

Reported Sept 18th.

KILLED.—Greenwell, Lt. J. E., R.A.F.
Hunt, Lt. D. R., R.A.F.
Lee, Lt. W., R. Ir. Fus. and R.F.A.
Yeulett, Lt. W. A., R.A.F.
PREVIOUSLY REPORTED WOUNDED, NOW REPORTED KILLED.—Driscoll, Lt. D. O'Neil, Middx. R. and R.A.F.
Twohey, P.F.O. W. F., R.A.F.
PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Helmer, Lt. E. W., R.A.F.
Thompson, Sec. Lt. H., R.A.F.
Thompson, Sec. Lt. L., R.A.F.
DIED OF WOUNDS.—Oertling, Lt. L. J. F., Bedf. R. and R.A.F.
DROWNED.—Porter, Lt. E. M., R.A.F.
WOUNDED.—Barter, Sec. Lt. A. K., D.F.C., R.A.F.; Bulman, Sec. Lt. T. S., R.A.F.; Caton, Sec. Lt. F., R.A.F.; Child, Sec. Lt. V. L., R.A.F.; Dewhirst, Sec. Lt. A., W. Yorks. R. and R.A.F.; Gompertz, Sec. Lt. H. C. T., R.F.A. and R.A.F.; Gyles, Sec. Lt. P. F., R.A.F.; Marshall, Sec. Lt. J. W., R.A.F.; Purvis, Lt. M. C., R.A.F.; Roberts, Capt. G. G., R.A.F.; Turner, Sec. Lt. C. E., R.A.F.
MISSING.—Ambler, Lt. J. J., Northd. Fus. and R.A.F.; Collins, Lt. V. St. B., R.A.F.; Corkery, Sec. Lt. J. P., R.A.F.; Dennitts, Sec. Lt. K. J. W., R.A.F.; Dowling, Capt. B. L., R.A.F.; Ferrand, Maj. J. B. P., R.A.F.; George, Lt. I. F., R.A.F.; Gormley, Sec. Lt. A. J. C., R.A.F.; Hickes, Sec. Lt. R. I. A., R.A.F.; Ingram, Sec. Lt. R. T., R.A.F.; Jones, Sec. Lt. T. A., R.A.F.; Laing, Sec. Lt. T. H., R.A.F.; Living, Sec. Lt. C. H., R.A.F.; McCulloch, Sec. Lt. I. M., R.A.F.; Macfarland, Lt. F. M., R.A.F.; Mackereth, Capt. J., R.A.F.; Myring, Sec. Lt. T. F. L., R.A.F.; O'Connell, Lt. O., R.A.F.; Papworth, Sec. Lt. A. S., R.A.F.; Perry, Sec. Lt. L. P., R.A.F.; Peterson, Sec. Lt. R., E. Yorks. R. and R.A.F.; Preston, Sec. Lt. A., R.A.F.
CADETS KILLED.—Buchanan, I. F.,
Cook, F. R.
Kaplan, H.
Talbot, C. D.
Thompson, S. P.
White, G. J.

CASUALTIES AMONG WT. OS., N.C.OS. AND MEN OF THE R.A.F.
THE DATES ARE THOSE OF THE OFFICIAL LIST.

KILLED.

SEPT. 14th.—Bence 224846 Cpl. S. J. (Leytonstone); King 32639 Air Mech., 3rd Cl., G. W. (Finchley, N.W.); Manning 225858 Serjt F. G. (South Hackney); Simmons 402899 Air Mech., 3rd Cl., W. S. (Little Britain, London, E.C.).
SEPT. 16th.—Offord 163783 Air Mech., 3rd Cl., C. W. (Chiswick, W.); Simmonds 119946 Air Mech., 2nd Cl., H. (Petersfield, Hants); Winrow 104987 Air Mech., 2nd Cl., A. J. (Chorlton-on-Medlock, Manchester).

DIED OF WOUNDS.

SEPT. 16th.—Jeffery 54549 Air Mech., 3rd Cl., F. J. (Tooting).

DIED.

SEPT. 14th.—Bonsall 22976 Air Mech., 3rd Cl., J. (Moss Side, Manchester); Pooley 262453 2nd Pte. J. E. (Howden).
SEPT. 16th.—Eastwell 20133 1st Pte. J. T. (Walthamstow).

WOUNDED.

SEPT. 14th.—Baines 64958 Air Mech., 3rd Cl., H. (Hillingdon Heath, Middlesex); Belcher 100071 Serjt.-Maj. N. M. (Dorchester, Wallingford); Dalby 405713 Air Mech., 1st Cl., A. (Stamford, Rutland); Deakin 96745 1st Pte. E. (Lower Walsall); Gough 27836 Air Mech., 3rd Cl., G. S. (Middleton Square, E.C.); Meecham 115378 1st Pte. J. (Dundee); Oldham 403151 Air Mech., 1st Cl., J. (Burnham, Somerset); Walker 23082 2nd Clk. G. C. (East Grinstead); Williams 24579 Air Mech., 1st Cl., C. R. (Tooting).
SEPT. 16th.—England 217943 Serjt. E. B. (Muswell Hill, N.); Mitchison 100090 Serjt. J. V. (Ashington, Northumberland).

MISSING.

SEPT. 14th.—Beetham 86056 Serjt-Mech. O. D. (Leeds, Yorks.); Ellery 226194 1st Pte. F. A. (Walthamstow); Wallace 3118 Serjt.-Mech. A. C. (Edinburgh).
SEPT. 16th.—Chalmers (alias J. Horton) 213029 Serjt./Mech. J. W. (Cheltenham); Windridge 212112 Serjt. A. L. (Borough, S.E.).

PERSONAL NOTICES.

NAVAL.

ENGAGEMENT.

HUNTER—JEROME.—The engagement is announced of Capt. J. E. L. Hunter, D.S.C., D.F.C., R.A.F., only son of Ellis Hunter, Shanghai, and Miss Muriel Jerome, only daughter of Charles Jerome, Hazeldene, Littlehampton.

* * *

Lt. J. F. George, R.A.F., late R.N.A.S., was reported missing on Aug. 25th. Information from friends who are corresponding with prisoners of war in Austria will be gratefully received by his brother, W. A. George, Bettinge, Cranford, Middlesex.

* * *

The following appointment has been made in the Royal Navy:—
SEPT. 12th.—R.N.V.R.—Lt. (Temp.)—Lt. F. C. Thorn, R.A.F., has been granted a commn. as Lt. (temp.), R.N.V.R., and appointed to Crescent, Sept. 10th.

MILITARY.

DEATHS.

BRINDLEY.—Sec. Lt. Victor George Brindley, R.A.F., who was killed on Aug. 30th, was 27 years of age, and elder son of Mr. and Mrs. G. J. Brindley, of Kopjes, South Africa. He was educated at Mill Mead, Shrewsbury, and Oundle. When war broke out he joined the Forces under General Botha, and went through the South African campaign. Afterwards he came to England with a battalion of South African Infantry, fought in Egypt, and then went to another front, where he was in the trenches for 15 months, taking part in several of the chief engagements. Later, he obtained a commission in the Royal Air Force, and returned to the front on July 14th last.

BUCK.—Capt. Geoffrey Sebastian Buck, M.C., D.F.C., R.A.F., killed on Sept. 3rd, was the eldest son of Dr. and Mrs. Percy C. Buck, of Harrow-on-the-Hill. He was educated at Mr. Lynam's Oxford, and at Winchester (Mr. Bell's House), and played in the Eton and Winchester cricket match in 1914. Gazetted as second lieutenant to the Royal Fusiliers in November, 1914, he served with them in France till July, 1916, when he joined the R.F.C. He was 23 years of age in May of this year.

THORP.—Sec. Lt. Charles Evans Thorp, R.A.F. (late 2nd Batt. Artists' Rifles, who died on Aug. 30th of wounds received in action on that day, was the elder son of Mr and Mrs. A. Evans Thorp, of 9, Queen's Road, Leytonstone, E.11. He was 19 years of age.

TOWLER.—Sec. Lt. Cyril John Towler, R. W. Kent Regt.,

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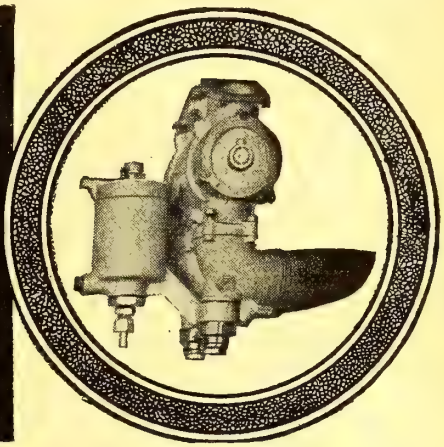
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attd. R.A.F., who was instantaneously killed on Sept. 4th in flying accident, was the son of Mr. and Mrs. F. Towler, of Sleaford. He was 22 years of age.

ENGAGEMENTS.

BELFIELD—HENEY.—A marriage has been arranged, and will take place quietly at the Chapel Royal, Savoy, at 2, on Wednesday, Oct. 9th, between Capt. A. G. N. Belfield, R.A.F. (late Devon Regt.), only son of Arthur Belfield, 5, Kensington Square Mansion, W.8, and Clarisse, only daughter of Mr. and Mrs. Heney, 30, Doverfield Road, S.W.2. No invitations will be sent, but friends will be welcome at the church.

HOPE—ALLEN.—A marriage has been arranged, and will shortly take place, between Lt. Reginald J. H. Hope, R.E., only son of Mr. and Mrs. J. Harte Hope, late of Turvey Abbey, Beds, and Eastbourne, and Mrs. Melville Allen, widow of Lt. M. R. H. Allen, R.F.C., and daughter of Major and Mrs. J. S. Lightfoot, of Bedford.

MARRIAGES.

BARKER—GREGORY.—On Sept. 10th, at Lancing Parish Church, Sec. Lt. Sydney Barker, R.A.F., late Canadian Engineers, elder son of the late Charles Barker, of Douglas, I.O.M., and Southport, and of Mrs. Barton, of Manchester, was married to Gladys, eldest daughter of Mr. and Mrs. Maurice Gregory, of Sussex Lodge, Shoreham Beach, formerly of Streatham, and granddaughter of J. R. Blackford, formerly of Sutton, Surrey.

HAZLEHURST—LAST.—On Sept. 12th, at Bath, Henry Edward Hazlehurst, The King's (Liverpool) Regt., attd. R.A.F., was married to Cicely, only daughter of the late W. A. W. Last, Indian Civil Service and Major, United Provinces Light Horse, and Mrs. Last, of Leamsford House, St. Albans.

OXSPRING—WARDLOW.—On Sept. 11th at the United Methodist Church, Surrey Street, Sheffield, Capt. Robert Oxspring, M.C., K.O.Y.L.I. and R.A.F., son of Mr. and Mrs. Joseph E. Oxspring, of Wardsend House, Sheffield, was married to Gladys, elder daughter of Marmaduke Wardlow, J.P., and Mrs. Wardlow, of "West Royd," Sheffield, by the Revs. H. G. Watts and G. Graves.

BIRTHS.

HENNELL.—On Sept. 11th, the wife of Lt. C. Murray Hennell, R.E. and R.A.F., of 15, Kenilworth Court, Putney, S.W., of a son.

STRANGE.—On Sept. 16th, at Sutton Scotney, Hants, to Marjorie, the wife of Lt.-Col. L. A. Strange, M.C., D.F.C., R.A.F.—a son.

AIR FORCE.

DEATHS.

JENNINGS.—Lt. Frederick Robert Jennings, R.A.F., who died in a hospital abroad on Sept. 2nd, was the youngest son of Mrs. Jennings, Croft Road, Crowborough. He was 19 years of age.

LOVELL.—Harold Frederick Lovell, R.A.F., who was killed on Sept. 5th whilst on duty, was the eldest son of Wm. Fredk. Lovell, "Rothbury," Brackley Road, Beckenham, and 72, Ludgate Hill. He was 31 years of age.

McCALLUM.—Lt. Arthur Richard McCallum, R.A.F., who was killed in an aeroplane accident on Aug. 29th was the husband of Esmée McCallum, of British Columbia

PLUMMER.—Lieut. Frederick Plummer, R.A.F., who was killed in a flying accident on Sept. 12th, was the elder son of Mrs. Plummer, of 48, Drakefield Road, Tooting Bec Common, S.W.17. He was 30 years of age.

SAVAGE.—An inquest was held in a Yorkshire town on Sept. 12th concerning the death of Lt. Harry Lombard Savage, R.A.F., aged 19, of Exchange Street, Bangor, Maine, U.S.A. While flying on Sept. 11th his machine collided with another at a height of 1,000 ft. The officer in the other machine had a marvellous escape, being but comparatively slightly injured, and reported to be doing well. A verdict of accidental death was returned.

SUTTON-JONES.—Lt. Cecil Gwyn Sutton-Jones, R.A.F., who was killed on Sept. 11th whilst flying in Northumberland, was the only son of Mrs. Gie Sutton-Jones, and the late Lt.-Col. G. Sutton-Jones, Bhopal Batt. He was 28 years of age.

THOMPSON.—Lt. Cecil Frederick Johnstone Thompson, R.A.F., who was accidentally killed whilst flying on Sept. 6th, was the only son of Mr. E. J. Thompson, of the Stationery Office. He was 21 years of age.

ENGAGEMENTS.

OXLAND—DUMBLETON.—The engagement is announced between Maj. R. D. Oxland, R.A.F., second son of Charles Oxland, and Thelma Marion Peter, youngest daughter of Alan S. Dumbleton, Victoria, B.C., and granddaughter of the late Henry Dumbleton, of Hallgrove Park, Bagshot.

MARRIAGES.

FARRER—ROBERTS.—On Sept. 11th, at St. Peter's-upon-Cornhill, Major Arthur W. Farrer, R.A.F., second son of Mr. John Farrer, Crouch End, N., was married to Ethel Florence, eldest daughter of Mr. and Mrs. Carlton Roberts, Golders Green, N.W., by the Rev. G. Bell Doughty.

W. G. TARRANT.

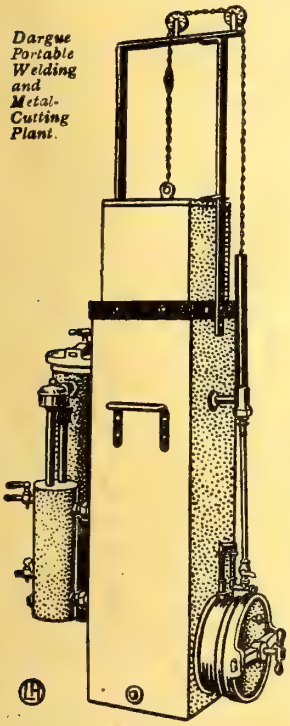
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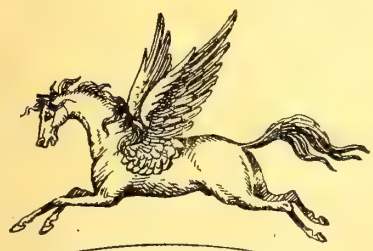
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LEGGE—STOKES.—On Sept. 11th, at Sanderstead, Lt. Geoffrey T. Legge, R.A.F., only son of Mr. and Mrs. J. T. Legge, of Croydon, was married to Vera, third daughter of Mr. and Mrs. H. F. Stokes, of Sanderstead.

MATTHEWS—DIETRICHSEN.—On Sept. 14th, at St. Mary's, Loughton, Essex, Lt. Stuart Leslie Matthews, R.A.F., son of Lt.-Col. W. H. Matthews, D.S.O., of Wimbledon, was married to Marcia Neva, daughter of James M. Dietrichsen, Loughton, by the Rev. C. A. Campbell assisted by the Rev. C. A. Gell.

WIGRAM—TRUMAN.—Maj. Cyril C. Wigram, R.A.F., younger son of the late H. J. Wigram, Esq., and Mrs. Wigram, of Northlands, Salisbury, was married by special licence to Olivia Marie, daughter of the late Maj.-Gen. W. Truman and Mrs. Truman, of Winterbourne, Bonchurch, Isle of Wight.

WOOLLETT—FOSTER.—On Sept. 10th at St. Benedict's Church, Ealing, Lt. John Charles Woollett, R.A.F., son of Dr. C. J. Woollett, of Streatham, was married to Dorothy, twin daughter of the late Mr. F. Foster, of Ealing, and Mrs. Foster, of 115, Twyford Avenue, Acton, by the Rev. P. H. Mason, assisted by the Rev. E. Green.

BIRTH.

GARFIT.—On Sept. 13th, at Elmside, London Road, Salisbury, the wife of Capt. H. de B. C. Garfit, R.A.F., of a daughter.

MITCHELL.—On Sept. 10th, at Orford, to Catherine, the wife of Maj. W. C. Mitchell, R.A.F., and R.A.F.—a son.

* * *

Capt. Brian L. Dowling, R.A.F., has been missing since Sept. 2nd. Information gratefully received from hospitals and camps in Germany by Mrs. de Grey Warter, 47, Knightsbridge.

* * *

Capt. W. O. Boger, R.A.F., was reported missing Aug. 10th. Information will be gratefully received from hospitals or camps in Germany by his mother, Mrs. Boger, 61, Oakley Street, Chelsea.

FOREIGN COMMUNIQUES.

FRANCE.

Sept. 8th.—Army of the Orient.—There has been aviation activity on the greater part of the front.

Sept. 10th.—During August our day bombing machines were able to drop 269 tons of bombs on enemy territory between the Somme and Aisne. Our night bombing machines have bombed railway stations and the enemy's lines of communication—362 tons of bombs have been used for this work. Also during August 280 enemy aeroplanes have been brought down or driven down out of control (of which 29 were brought down by our anti-aircraft guns) and 66 enemy captive balloons have been brought down in flames.

Sept. 10th.—During the month of August our day-bombers dropped over 269 tons of projectiles on objectives on the battlefield between the Somme and the Aisne. Our night-bombers, attacking the railway stations and enemy ways of communication, dropped 362 tons of projectiles.

During the same month, 280 enemy aeroplanes were brought down or fell in a damaged condition, including 29 accounted for by anti-aircraft guns. Sixty-six enemy captive balloons were set on fire.

Army of the Orient.—British aviators bombarded some enemy camps.

Sept. 12th.—Army of the Orient.—French and British aviators dropped 400 kilogrammes (nearly half a ton) of explosives in the region of Demirkapu, Gradsko and Seres.

Sept. 13th.—Army of the Orient.—British aeroplanes have bombed hostile encampments in the valley of the Struma

Sept. 14th.—During Sept. 12th and 13th our aviators took an active part in the offensive actions of the American Army. In spite of a violent wind, low clouds, and rain, our bombing and chasing machines attacked troops and convoys in the region of Conflans, Chambley, Vigneulles, Hattonchâtel, and Mars-la-Tour.

Seven enemy machines were brought down or put out of action, and one captive balloon was brought down in flames.

In addition, our observation aeroplanes did not cease, in spite of all difficulties, in their task of informing the Command as to the situation on the battlefield and as to the progress of our troops supporting the American units.

Sept. 14th.—Army of the Orient.—French, Serbian and British aviators dropped two tons of bombs on enemy encampments.

Sept. 15th.—On Saturday, in conjunction with the American Army and on our own front, 14 enemy aeroplanes were brought down or driven down out of control, and seven balloons were set on fire. Six and a-half tons of bombs were dropped during the day on enemy assemblies. During the night our bombarding squadrons dropped more than 23 tons of projectiles on the stations of Laon, Mortiers, Juniville, Conflans, Mars la-Tour, etc.

Sept. 16th.—During Sept. 15th our Air Service, favoured by the fine weather, was extremely active. Our aviators directing their efforts to impeding the enemy's observation work, obtained remarkable results. In spite of the powerful protective measures undertaken in order to defend observation balloons, 16 captive balloons were brought down in flames. In addition numerous air fights took place, in the course of which 12 German machines were brought down.

Our bombarding air service during the night of Sept. 15th-16th made expeditions against the lines of communication, the stations, and cantonments behind the enemy's front. The railway stations of Laon, Amagne, Marle, Longuyon, Doumary, Baroncourt, and Conflans were freely bombed and suffered important damage. Fires and explosions were observed, especially at Marle and Longuyon. A total of 46 tons of bombs was dropped.

Several squadrons of enemy aeroplanes made for the Paris district in the small hours. They were reported en route, and were chased by our outposts. An intense barrage was put up, and other means of defence were also brought into action. Several bombs were dropped, and there were some victims. Some material damage was also done. The warning was given at 1.25 a.m., and the "All clear" at three o'clock.

Army of the Orient.—Serbian and French aviators took part in the operations, effectively supporting the advance of the infantry and bombing the enemy's communications.

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GERMANY.

Sept. 16th.—As a reprisal for the continued bombing of German towns, 22,000 kilogrammes (22 tons) of bombs were dropped on Paris during last night by our bombing squadrons.

We shot down four enemy aeroplanes and 15 captive balloons.

ITALY.

Sept. 8th.—In spite of the frequently adverse weather conditions our Naval Air Force has maintained its usual activity in the Adriatic and on the Albanian Front.

During the day of Sept. 2nd, the night of Sept. 5th. and the day of the 6th our aeroplanes successfully bombed the enemy's lines, while large groups of seaplanes dropped altogether 1,500 kilograms of bombs on the Ardenika Monastry and on the Ponte Novo over the River Skumbi, which was hit in the centre and set on fire. Other bombs caused damage to the military hutments along the river banks.

Nearly every day our machines flew over Durazzo for reconnoitring and bombing the military works and harbours. During the day of Sept. 5th they dropped there 700 kilos of explosives, damaging the vessels at their moorings. One vessel was hit by a large bomb. On the same day a squadron of seaplanes, co-operating with our light units, successfully bombed and machine-gunned, from a low altitude, enemy torpedo-boats and small convoys which had sought the protection of the coastal batteries, near Dulcigno. Two of our machines which were obliged to come down on the sea were recovered, with their pilots, by our torpedo-boats.

The enemy reaction was limited to a fruitless attempt to raid Ancona. This was frustrated by our anti-aircraft fire and the prompt action of our naval and military chasing aircraft. A few bombs which the enemy dropped did not strike the town and caused no damage.

The enemy machines were vigorously pursued by our chasing seaplanes, nearly as far as Pola. A fight took place with enemy seaplanes which ascended from Pola and one enemy seaplane was seen to fall out of control into the sea.

Sept. 12th.—Three hostile machines were brought down in air combats.

Sept. 15th.—Yesterday morning in the Brenta Valley infantry and Arditi parties, after short but very effective preparation of artillery and with co-operation of aeroplanes bombing and shooting from very low heights, attacked the enemy barrage of the Grovella south of Corte.

Yesterday bombing and reconnoitring flights and airships of the Army and of the Royal Navy bombarded successfully enemy aerodromes in the region of the Upper Adige and the establishments and military works of Pola. Five hostile machines were brought down in air combats.

Sept. 16th.—Army and Navy airships dropped nearly 15 tons of bombs on various military targets along the enemy lines of communication. One hostile machine was brought down in air combats.

AUSTRIA.

Sept. 13th.—Squadron-leader Groslovic yesterday brought down three enemy aeroplanes over Durazzo.

U.S.A.

Sept. 14th.—French pursuit, bombing and reconnaissance units, and British and Italian bombing units, divided with our own Air Service the control of the air, and contributed materially to the success of the operation

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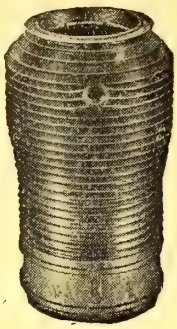
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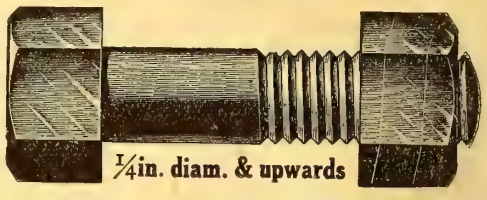


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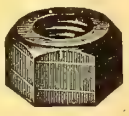
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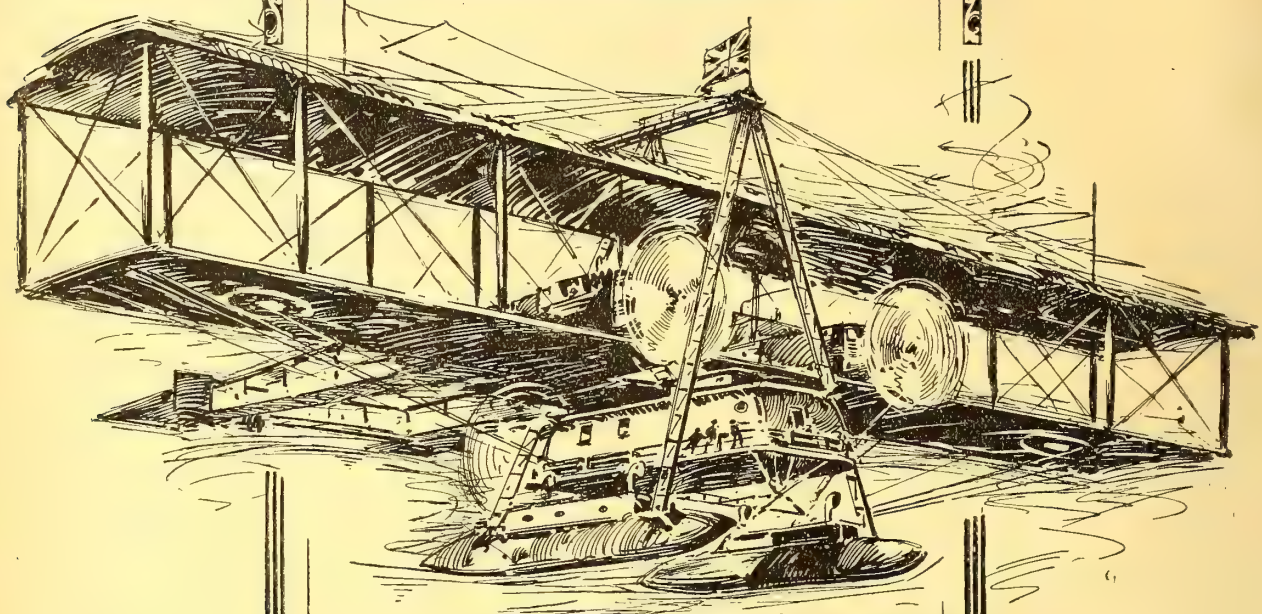
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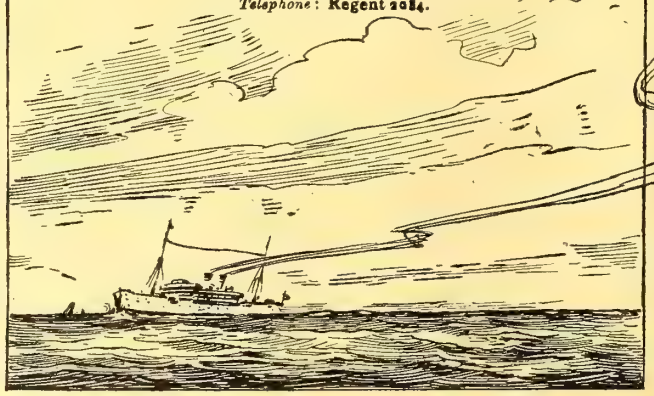
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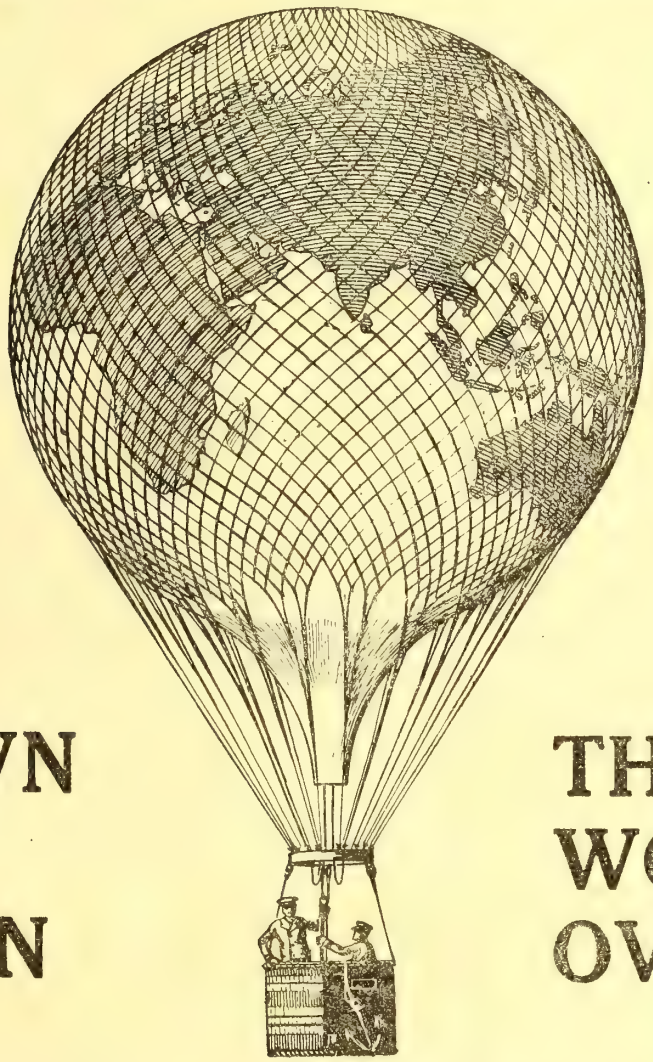
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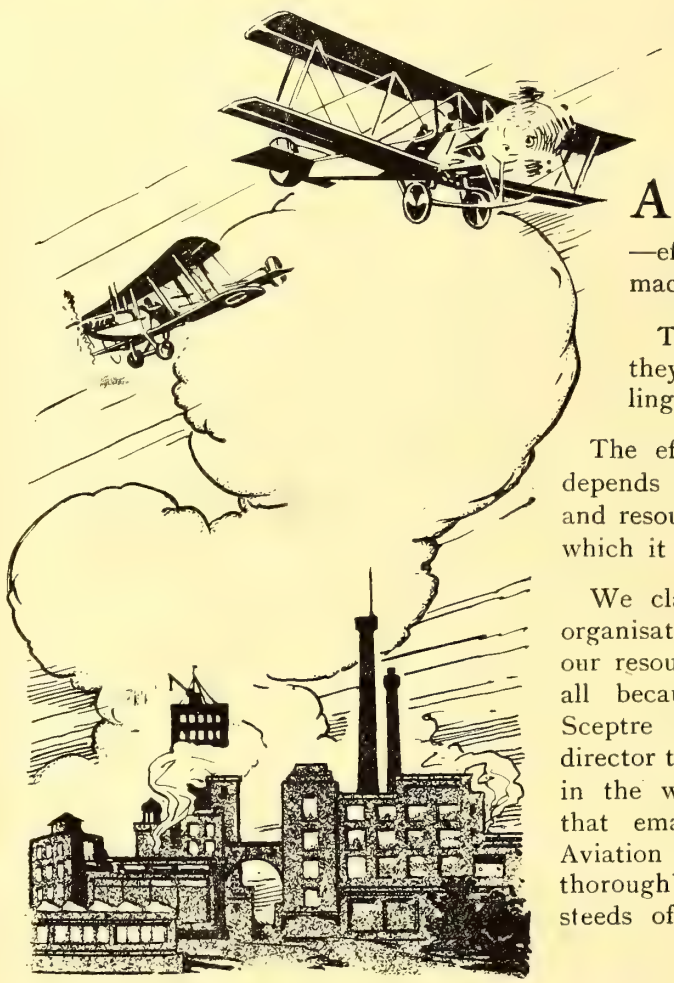
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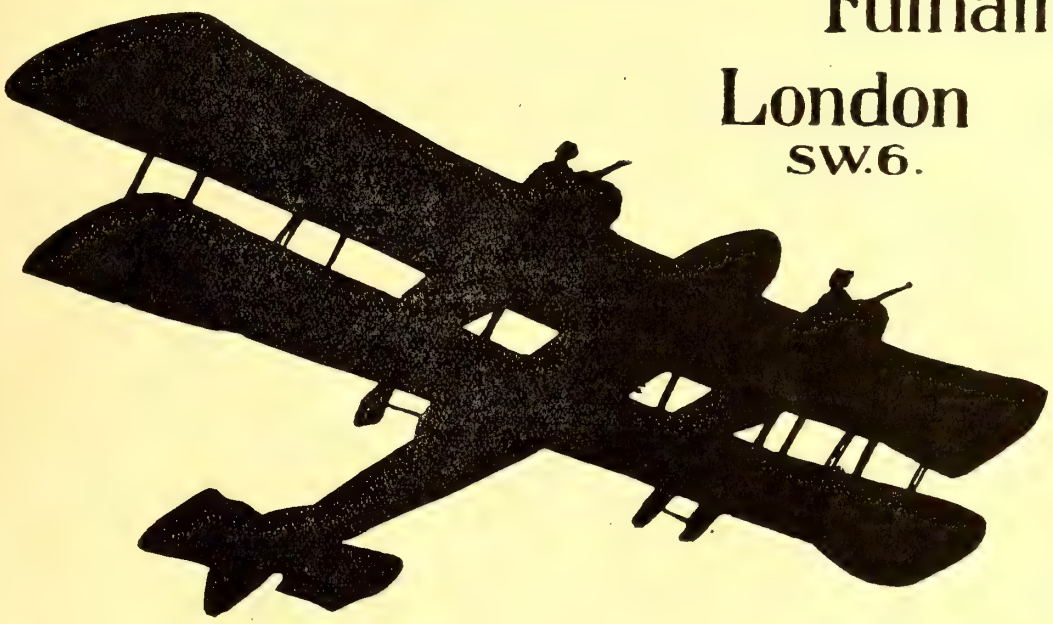
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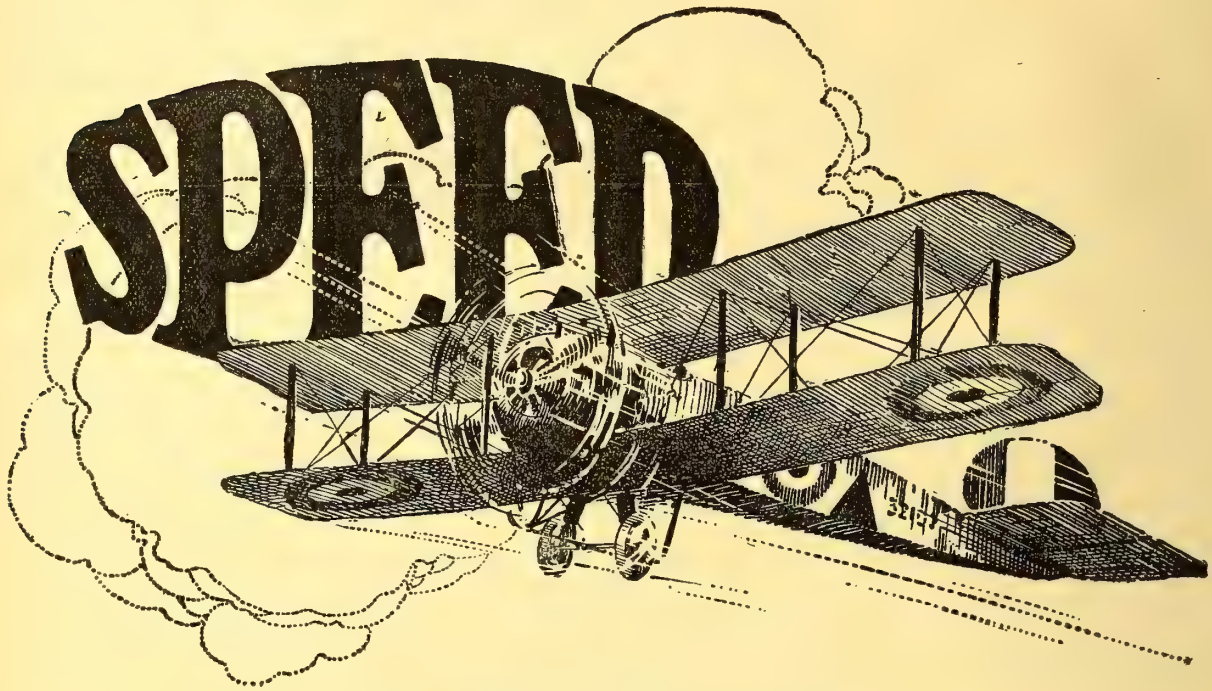
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ON THE WRAF WRANGLE.

It seems that the whole Wraf Wrangle ought to be the subject of a serious official inquiry, for evidently it extends a great deal further than the question of whether the Hon. Miss Douglas-Pennant was wrongfully dismissed or not. One writes entirely without prejudice in the matter, for one knows nothing personally of either Miss Douglas-Pennant or of her successor—or supplanter, as some would have it—Mrs. Gwynne-Vaughan. Miss Pennant's name sounds too much like the name of Tennant for anyone concerned with aviation to fall in love with it at first sight, and Mrs. Vaughan's name is so obviously Welsh that it also escapes prejudicing anyone in its favour, so that one can even plead that one is free from bias on the score of family names, which do in fact carry much more influence than most people think.

Therefore, without being either for or against either of these doubtless estimable ladies, one can say that according to various reports the W.R.A.F. seems to have made rather a mess of itself. Reasoning on a purely chronological basis, it would appear obvious that any discontent, muddle, envy, hatred, malice, and all uncharitableness which existed prior to the advent of Mrs. Gwynne-Vaughan must be attributed to Miss Douglas-Pennant's *régime*. But quite possibly it might be proved that it was due to one or some of her subordinates and that she had not been allowed time to discover the source of the trouble before suffering the summary dismissal on account of which she is demanding an inquiry.

On the other hand, so far from matters being improved by the rule of Mrs. Gwynne-Vaughan, it seems that anything which was wrong under the former administration has at least an equal wrong under the new. It is always better in discussing official muddles to quote specific instances, so let us take the Roper Hall affair, which, judged by any reasonable standard of common sense or fairness, seems to have been a scandalous piece of mismanagement and injustice.

One day last week the "Daily Express," which is always prompt in discovering anything which is amiss with aeronautical affairs, published a short article which reads as follows :—

W.R.A.F. TROUBLES.

Dearth of Suitable Officers for the Work.

What is the matter with the Women's Royal Air Force? Miss Douglas-Pennant, head of the Force, resigned some time ago, and with her several officers at headquarters. It is understood that she has laid her "case" before the Prime Minister.

Mrs. Gwynne-Vaughan, her successor, has had wide experience in dealing with women in France, but there is still considerable unrest in the Force, and great difficulty in getting suitable officers.

The work at Hurst Park, which is the headquarters of the motor-transport section, is almost at a standstill from lack of members and officers, yet Sandown Racecourse has been requisitioned by the Government for an extension of the W.R.A.F. work, and girls are to be billeted there in huts.

Baroness T'Serclaes was until a day or two ago Administrator at Roper Hall, Eltham, where there is a probationary course for officers.

"It is quite true that large numbers of women who have come to Eltham have been 'turned down,'" she said to a "Daily Express" representative yesterday. "Selection boards send us hopelessly unsuitable candidates. Most of those selected by our own officers in London turn out extremely well, but those chosen by officials of the Labour Exchanges are seldom of the material of which officers are made."

The baroness was busy yesterday securing helpers for Hurst Park, where she is now in command.

Just why the Baroness T'Serclaes should have been selected as Administrator, first at Roper Hall and then at Hurst Park, is not obvious on the face of it. Doubtless Mrs. Gwynne-Vaughan could explain. So far as one can gather, the Baronne T'Serclaes has not been concerned with the organising of women's work during the war, nor has she had command of small numbers of women before being thus appointed to the command of large numbers.

One gathers from the public news-sheets, illustrated as a rule, that she is one of two very brave young women, known to journalism as "the Heroines of Pervyse," who have endured considerable danger and discomfort in Belgium while ministering to the armies in that area, and who have been unhappily unsuccessful in avoiding the limelight of publicity and the lense of the camera while being happily successful in capturing numerous military decorations. Nevertheless, the war has taught us on very many occasions, in the Navy, Army, and Air Force, that transcendant personal bravery does not necessarily entail even a modicum of organising ability, administrative faculty, power of leadership, judgment of one's fellows, or even of plain common sense.

The Baronne T'Serclaes may be possessed of all these qualities to an inordinate extent; on the other hand, she may not. And judging from her published opinions, as reported by the "Express," she is at any rate lacking in the faculty of judging her fellow-women, as an inquiry into the full facts concerning the Roper Hall affair would probably show.

The Roper Hall Affair.

Briefly, one gathers that some 180 young women were assembled at Roper Hall for a short course of training as W.R.A.F. officers. Miss Douglas-Pennant came down and inspected them, and expressed her approval of them on the average. Incidentally, one learns that she herself impressed the better-class women among the candidates as being a very charming and at the same time a very able woman, under whom it would be satisfactory to serve.

There were, it is true, among the candidates a certain number of women who were, in the words of the Baronne T'Serclaes, "hopelessly unsuitable" and not "of the material of which officers are made." The

female bounder and the she-cad, though less numerous in proportion than the male variety, is more virulent, for, as Mr. Kipling has said: "The female of the species must be deadlier than the male." And one hears that there were a certain number of both sorts at Roper Hall, besides some who were merely unsuitable because of their lower social status, these last being doubtless the products of the Labour Exchanges to which Madame la Baronne referred.

The Choice of Candidates.

Presumably the responsibility for the initial choice of candidates for commissions rests on the Douglas-Pennant *régime*, and whoever thought of obtaining candidates for commissions through Labour Exchanges can only have been a congenital idiot, and/or an intimate friend of Mr. Lloyd George who hoped to please our beloved Premier by putting his pet institutions, the Labour Exchanges, to some practical use. Any person with a gleam of sense or the least knowledge of the workaday world, would know that no decent workman ever goes near a Labour Exchange to look for a job.

The Labour Exchange is regarded by the self-respecting worker as the resort of the loafer and the unemployable. He himself is occasionally forced to go there when he has transferred from one job to another and has to get his transfer regularised in accordance with the tyrannous laws of Mr. George's famous Democracy. He knows that he is then bullied by junior clerks and office-boys, or by snappy-faced young women, who tell him to "sign here" or "fill up that" in a peremptory manner that makes him long to slap their faces.

The atmosphere of the whole place is something between that of a panel-doctor's dispensary and the casual ward at a workhouse. And that is the kind of place whence some drivelling imbecile on Miss Douglas-Pennant's staff expected to obtain "the material of which officers are made." Anyhow, one of the "several officers at headquarters" did a public service by resigning: unless—horrid thought—that particular she-ass is one of those who did not resign, and is still on the staff of Mrs. Gwynne-Vaughan, carrying out under her benign rule the ideas of our leading Welsh Democrat.

One can quite believe that the Labour Exchange candidates were pretty hopeless, for one can scarcely imagine any woman except the regular pre-war factory-girl or lower-class "slavey" going into such a place—barring, of course, here and there a very strong-minded (and strong-nosed) young woman of high education, who had schooled herself in the highest theories of Democracy and knew nothing of its practices. The errors attributed by Madame la Baronne to the selection boards are less easily understood, for though now and again an unsuitable candidate might be passed through, it is a fact, which can be verified if a proper inquiry is held, that the women at Roper Hall were of very fair average quality.

What Actually Happened.

Now here are a few facts as to what actually happened, unless one has been grossly misinformed, which is extraordinarily unlikely under all the circumstances. Things were going quite nicely at Roper Hall when the change in administration at Headquarters took place. Certain of the candidates were obviously unsuitable, others were equally obviously of the desired quality, which is precisely what one would find in any O.T.C. or Cadet Battalion in the Army or Air Force.

The examinations were held, and then the final selections were made. To the amazement of everyone among the candidates, successful and unsuccessful alike, only 40 women were passed for commissions and 137 were turned down. In accordance with Army custom no reason was vouchsafed to the unsuccessful for their being turned down, which is not a matter for complaint. At the same time, if an inquiry is ever held into the affair, it would be well to look into this side of the question.

It seems certain that the selections were not made on the excellence or otherwise of the examination papers, for some who admitted themselves that they had done poor papers were given commissions, and others of high mental calibre and education were turned down. Nor does it seem that social standing went for much, for gentlewomen who are distinctly of the "officer class" were turned down and women of the class who would normally make useful "section leaders" were given commissions.

There seemed to be some general scheme in favour of giving commissions to women who had been N.C.Os. in the W.A.A.C., which is comprehensible when one realises that Mrs. Gwynne-Vaughan was herself a W.A.A.C. Administrator, and would naturally incline to giving commissions to some of her old N.C.Os., just as it has seemed well to give commissions to approved N.C.Os. of the Old Army so as to provide a stiffening for the young officers of the Conscript Armies. There is nothing in that at which anyone can complain.

But the real point is, can the whole 177 women selected on probation under Miss Douglas-Pennant's *régime* have been so thoroughly bad on the average as to make it necessary to turn down 137 of them? Frankly, one does not believe it, and one is more disposed to believe that a W.R.A.F. commission, like kissing, goes by favour. One is prepared, in fact, if the new *régime* cares to reconsider the acts of its minor officials at Roper Hall, to find half a dozen of the turned-down candidates who will compare favourably with any half-dozen of those selected for commissions.

What It Looks Like.

The whole affair gives one the impression that what happened was simply that Mrs. Gwynne-Vaughan's subordinates, or following, were determined to show the world at large that her or their standard for W.R.A.F. officers is immensely superior to that of Miss Douglas-Pennant, and came to the conclusion that the best way of doing so was to turn down a whole crowd of women selected on probation by Miss Douglas-Pennant's subordinates. And it seems that they did so, regardless of consequences.

Purely as a matter of window-dressing, what could look better, or what could justify Miss Douglas-Pennant's dismissal better, than being able to say: "Well, look at Roper Hall. We had to turn down 137 out of less than 180 women whom the old gang thought fit to be officers. You see how immensely higher our standard is than theirs?"

That is all very pretty in theory, and it is all very well as a political stunt. In fact, it demonstrates quite conclusively woman's ability to take her part in political life. But is it for the ultimate good of the W.R.A.F. and does Mrs. Gwynne-Vaughan herself know the truth about it? So far as one can learn, Mrs. Gwynne-Vaughan never went to Roper Hall while these candidates were there—whereas Miss Douglas-Pennant did so—and therefore it seems that she relied absolutely on the judgment of minor officials who may or may not be reliable in judgment.

One has the deepest reverence for women as a sex, and the greatest admiration for all that they have done in this war. One has for years supported their claim to the vote—if only for the reason that the average woman could not possibly make such an abject fool of herself at a polling booth as does the average man. One had hoped that her war-work had eliminated most

of the natural "cattiness" from woman and that her closer contact with man's work had inspired her with contempt for his political trickery. But this Roper Hall affair looks very like cattiness, or a political trick, or a bit of both.

One may be hopelessly and utterly wrong, but there are the facts so far as one can gather them. If there is anything to be said on the other side, one has a perfectly open mind, and will be pleased to say whatever there is to be said for or by the people who did the turning down. At the same time one repeats the offer to put up half a dozen turned-down candidates against half a dozen of those accepted, as examples of "the material of which officers are made."

Vae Victis!

Finally, as an example of the high state of organisation of the W.R.A.F. under the present *régime,* it is of interest to record the treatment of the turned-down candidates. Having been turned down, they were paid off and told to clear out of their quarters by a certain time. A motor lorry of small size was sent to take as much kit to the station as it would hold. It held the baggage of about 35 or 40 girls. It made one trip to the station and then went into the garage again.

Then the aborigines of Eltham and district were entertained by the inspiring spectacle of something like a hundred decent young women struggling along a mile or so of road with trunks and boxes and kit-bags of various sorts and sizes. The prevailing method seemed to be to lug the burden along in the dust by its handle for a few yards, and then sit on it and pant till the lugger's heart approximated to its normal r.p.m.

Of course, it is possible that, according to the ideas of Mrs. Gwynne-Vaughan and Co., or of the Baronne T'Serclaes, any W.R.A.F. officer worth her salt ought to be able to trot along a mile of road quite comfortably with a hundredweight or so of baggage on her shoulders, but one doubts whether the physical training at Roper Hall has produced such a state of muscular development even in the 40 fortunates. It certainly did not do so in the 137 whose luck was out.

The Case for Reconsideration.

The fact that people of sound experience and mature judgment do not agree with the verdict of the W.R.A.F. officials is proved by an incident which occurred to one of those who was turned down. Feeling duly humiliated, and not unreasonably indignant, she went to a certain office where responsible employment is found for young women of the better classes. Almost as soon as she had stated her business, the very capable business woman in charge of the office asked her whether she came from Roper Hall. She admitted rather shamefacedly that she did, and inquired why such a question was asked. The woman in charge replied that so many nice girls who had been kicked out of Roper Hall had been to her that day, looking for jobs, that she assumed that this was another of them.

It would be interesting to know whether the officials who did the turning down were people of equal experience in judging the social status and personal ability of their fellow-women. If the W.R.A.F. is to have officers of the right class, it is evident that those who choose such officers should be people in whose judgment everyone has confidence. The rank and file of the



Official Photograph.

At an Aircraft Supply Depot in France, where machines damaged on active service are rebuilt.

W.R.A.F. are, as a rule, girls of the domestic servant or factory-girl class. Their officers ought primarily to be gentlewomen, for none is quicker to recognise the genuine article than is a trained servant—which is why our *nouvelles riches* have so much "servant trouble" while the genuine aristocracy have little or none.

The "experienced cook-housekeeper" (as per advertisement), or the factory forewoman, may make an excellent N.C.O., as a section-leader, but she will not obtain the unquestioning obedience which is accorded to the woman who is used to controlling servants of her own, no matter how much experience she may have had as a Waac or a Wren. And it is absurd to dish out commissions to women of this class while graduates of Girton and the sisters and cousins and aunts of officers in the Navy and Army are turned down.

The cases of all those 137 women who were turned down ought to be reconsidered by a competent and unprejudiced mixed committee of women and men. Man's inhumanity to man is nothing compared with woman's ruthlessness to woman, and a couple of mere men ought to be appointed to such a committee, if only to act as a refining and softening influence.

Meantime the W.R.A.Fs. are shrieking for more officers. Does Mrs. Gwynne-Vaughan think for a moment that "the great difficulty in getting suitable officers" is going to be overcome while a considerable number of capable young women of the officer class are sprinkled about all over Great Britain, telling other young women of their own class, who are telling others, who are telling others—on the good old snowball principle—about the way in which the officials work the choice of W.R.A.F. officers?

Also, is it in the interest of the Royal Air Force that the services of so many capable young women should be lost? The Air Force vote has had to stand the cost of their keep for the time they spent at Roper Hall. They have also received a matter of £3 or £4 apiece as pay. And each has received a first-class ticket to her home, some as far as the North of Scotland. Added to this there is the cost of the upkeep of Roper Hall itself and its staff and officials during this particular period. And over and above all this there is the waste of the instruction which was imparted to the suitable candidates who were turned down.

Is all this to be wasted just because, so far as one can judge, one clique of women wants to score off another? True it is not a kolossaal financial scandal like the Loch Doon affair, or the case of a certain seaplane station which one could mention, but in its way it is serious enough, because if the W.R.A.F. is to be a useful and efficient force worthy of the work which it proposes to do for the R.A.F. it must be properly run by competent people in whose judgment the officers and rank and file have the same implicit faith that the officers and airmen of the R.A.F. have in their General Officers Commanding in the Field.—C. G. G.

THE COMMAND OF THE INDEPENDENT FORCE, R.A.F.

It now seems permissible to state in print that the G.O.C., Independent Force, R.A.F., is Major-General Sir Hugh Trenchard, K.C.B., D.S.O. This fact has, of course, been known to the German High Command for a considerable time, but it may still be news to some readers of this paper at home and to some members of the R.A.F. in the more distant war areas. However, one has now an opportunity of congratulating the Independent Force on their good fortune in having a leader whose first concern is the efficiency of the force which he commands, and who knows that efficiency depends primarily on the welfare of his men.

One is glad to find that new pilots and observers of the R.A.F. joining the Independent Force from the schools at home are absorbing that same enthusiasm for their leader which was such a remarkable feature of the R.F.C. when General Trenchard commanded the Army's flying service. Long-range bomb-raids, whether by night or by day, are more trying to the nerves than fighting over the lines, or doing photography or artillery observation for short stretches, and a high *moral* is proportionately difficult to maintain. Yet one can safely say, on the authority of the aviators themselves, that the *moral* of the I.F. is as high as that of the R.F.C. in the past or of the R.A.F. with the Army to-day. If any proof be needed of such a statement, it is only necessary to look at the published reports of the I.F.'s work. Despite heavy losses, due to the frantic, and very natural, anxiety of the Germans to protect their chief sources of armament supply, the raids go on steadily in fair weather or foul. On days when no reasonable person on the ground—at any rate, according to the ideas of a year or so ago—would expect to see an aeroplane, the German Rhineland towns are raided, and, if the total material damage is small, the moral effect is none the less great, and the hold-up of munition production is very considerable indeed. And the night raids are, in their way, at least equally effective.

Judging purely by the official communiqués, it is evident that the I.F. is steadily increasing in size, as is shown by the numbers of raids and by the weight of bombs dropped. As it increases in size so will its effect on Germany's munition production increase. Nothing succeeds like success, and the knowledge that they are really succeeding directly in damaging Germany constantly spurs the personnel of the I.F. to further efforts. To them alone is accorded the privilege of hitting Germany itself, instead of merely knocking pieces out of French or Belgian territory occupied by Germans. It is certain that their present and past successes, and the encouragement received from a leader so gifted with the ability to raise enthusiasm as is General Trenchard, will make the Independent Force before long one of the most important factors in the winning of the war.—C. G. G.

THE PALESTINE VICTORY.

Mr. W. T. Massey writes on Sept. 19th from Palestine concerning the recent Turkish defeat:—

Our mastery of the air prevented enemy observers from seeing any change in our dispositions, and the movements of large columns of troops of all arms were concealed skilfully in a country where marching men raise huge columns of dust and the enemy possessed observation posts commanding a wide range.

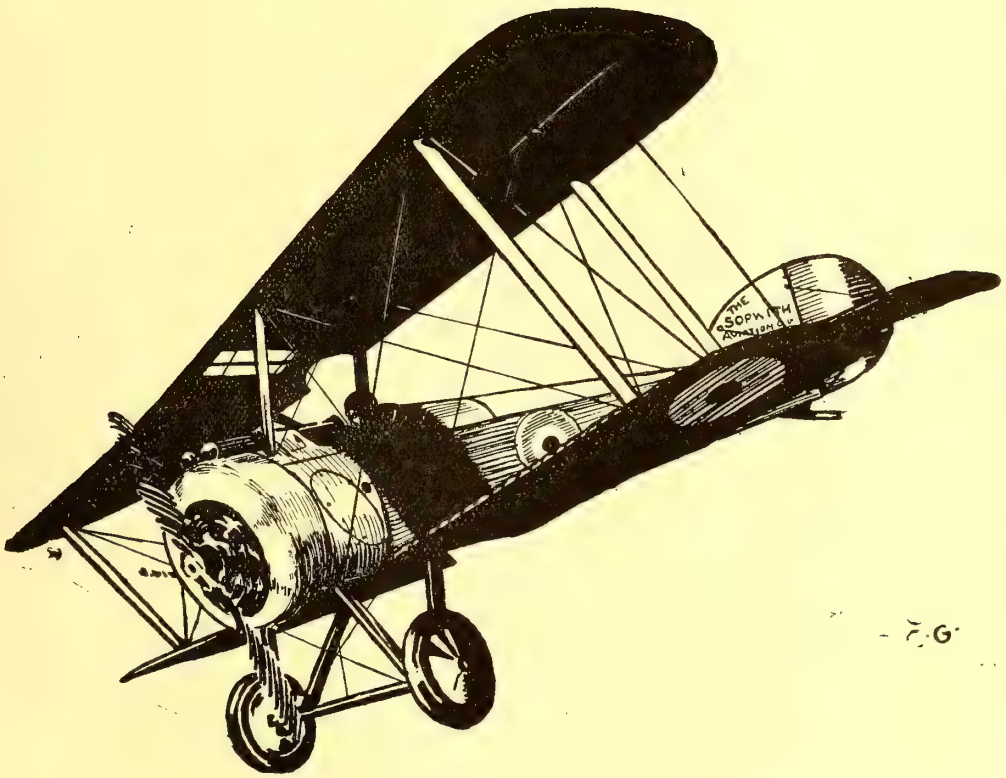
The air work throughout the day materially aided in securing this big victory. From daylight till dark, machines piloted by the Royal Air Force and the Australian Flying Corps incessantly bombed troops and transport, riddled with machine-guns men on the march and camps and transport, heavily bombing Afuleh and the headquarters at Nablus. All day patrols were over the enemy aerodrome at Jenin. Whenever a German machine appeared likely to rise it was bombed. I did not see one enemy aeroplane during the day.

On Sept. 20th he writes:—

On the low ground in the passes there are great quantities of transport, which cannot be moved because the men have taken the horses on which to try to escape the advancing troops, or because it has been smashed by aircraft.

The value of mastery of the air could not be better exemplified than by the air work during these operations Only one enemy machine has been seen except that captured to-day. This was near Haifa, but it fled on seeing one of our machines. We took three to-day at Afuleh aerodrome with their mechanics and all their equipment. Over 11 tons of bombs were dropped yesterday, and 66,000 machine-gun rounds fired from a low altitude on the retiring enemy. The roads are covered with damaged material and dead. The road from Jenin to Afuleh, along which the Turks were walking unconsciously into our hands, was heavily bombed to-day with great accuracy, and large numbers of the dead and smashed vehicles were plainly visible on the road through the hills. At one spot bombed transport blocks the passage. To-day's 10 tons of bombs clearly played havoc.

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AIR WORK ON THE AMERICAN FRONT.

During the recent heavy fighting over the American lines, one flying unit within two days was engaged in 33 combats, bringing down 17 enemy aeroplanes, and in addition successfully carried out 29 patrols.

Another unit, in the course of Sept. 15th last, dropped 17 tons of bombs upon a town known to be a German headquarters and filled with German troops, and returned again at night, dropping 20 tons more.

During the German withdrawal north-eastward from St. Mihiel the enemy was compelled to send his main transport stream up the Vigneulles-St. Benoit road, and for three days the American aviators harassed the retreating infantry and transport on this road by machine-gun fire and bombs from the air.

Lt. David Putnam, of Boston, the aviator who used to fly with the French squadron of which Lt. Fonck is now chief, was killed at Limey, south of Thiaucourt, on the 12th inst. He was shot down by a German aviator whose machine was seen to catch fire and fall as he made away, being Lt. Putnam's 15th victim.

Lt. Luke is now the balloon-stalking champion of the American Air Service. He has brought down nine enemy balloons in three days.

A POINT OF VIEW.

A neutral correspondent writes as follows :—

The leading editorial article of " Flugsport," issue of August 14th, is interesting and characteristic and worth while to render in extenso without any comments, reading to this effect :—

Italian aviators have flown over Vienna on Aug. 9th. The Italians expected more success from the dropping of pamphlets than of bombs. The lack of chances of success of this proceeding has been sufficiently commented upon in the daily press. Yet it is serious and the fact more interesting that a whole squadron could appear above Vienna without being hindered at all. The episode itself and the course of it might awake our Austrian brothers.

Some may have thought that such an attack—and then with bombs—cannot fail to come in Germany. The performance of the Italian aeroplanes, likely giant aircraft, is no more than an average performance, even with bombs. It must be hoped that they pay due sense to the kindness and the hint of the Italians in Vienna and see next time when the bombs will certainly not be lacking that they receive a worthy reception.

Austria-Hungary has the means and power to run a well-organised home protecting air service. Instead of using the material for aerial mail lines, etc., the procuring of a good working home protecting air service is the most needed. The Viennese could be spared of unpleasant surprises. They can be avoided.

AUSTRALIA'S SHARE.

The following is an extract from an article published by the " Daily Telegraph " on " Imperial Affairs " :—

In connection with the statement made regarding the formation of the Canadian Air Force, it should not be forgotten that the Australian Flying Corps was inaugurated just before the war broke out, and immediately after hostilities commenced took part in the Mesopotamia campaign Since then the corps has performed excellent work in Palestine and in other campaigns. Every unit of the Australian Flying Corps is composed exclusively of Australians, and the whole cost is borne by the Commonwealth Government, who also control appointments. The Australian Flying Corps is now represented in Egypt and in France, with training squadrons and headquarters in England.

TO WHOM HONOUR IS DUE.

Mr. G. Ward Price writes from Italian Headquarters on September 20th :—

Major Gabriel d'Annunzio, at the head of his pilots who made the raid on Vienna, was presented by King Victor this afternoon with the high decoration of an officer of the Military Order of Savoy. A dozen British pilots on this front received the Italian silver Medal for Valour.

After this ceremony there was the largest review yet held of the Italian Flying Corps. It was certainly one of the most striking spectacles seen anywhere since flight became practical. The pilots' skill and mastery of their machines were such that they played tricks close above and all round the royal party, which, besides, King Victor, consisted of the Prince of Wales, the Duke of Aosta (King Victor's cousin, who commands an Italian army), the Count of Turin, General Diaz, and the whole of the Italian General Staff.

SIAMESE AVIATORS.

From a well-informed Siamese source Reuter's Agency has received further details of the first Siamese contingent which arrived in France not very long ago. The contingent consists of units of Siamese ambulance, motor, and aviation corps, and is under the command of Major-General Sir Phya Bkijai Janridh, who was awarded the K.C.M.G. some months ago when he was head of the Siamese Military Mission to this country. The General, who has since been awaiting in France the arrival of the Siamese contingent, was, some twenty years ago, in the Belgian Army, and was educated in France.

The Siamese are peculiarly suited to aviation work on account of their extraordinarily keen eyesight, their smallness, and their daring. The members of the Aviation Corps, who have arrived in France, have had good training in Siam, which will be completed in France. They wear khaki uniforms much the same in cut as that worn by the British troops. Although there has been compulsory service in force in Siam for many years, the troops which are now arriving are all volunteers.

AMERICAN-BUILT AEROPLANES ON SERVICE.

General Pershing notified the War Department on Aug. 16th that early in August a complete squadron of de Havilland aeroplanes, built in the United States and equipped with Liberty engines, successfully carried out the first reconnaissance flight of American-built machines behind the German lines. They returned without loss.

In making this announcement, Secretary Baker said that Brig.-Gen. Foulois, of the American Air Service, led the Expedition. This was the first report from Gen. Pershing on the performance of American-built de Havillands to be made public.

The announcement was considered as setting at rest rumours that the de Havilland machines were not a success, and also as showing that the Liberty engines had now proved their worth in actual war conditions.

"Aerial Age," of New York, from which paper the above information is taken, says that the report does not state whether the squadron was attacked. "Aerial Age" presumes the flight was a scouting trip.

R.A.F. PLUMAGE.

The following is taken from " Punch " of Sept. 4th :—

Letter from Major Sir Fawcett Gear, R.A.F. (Deputy Director of Mechanical Transport Brake Linings), at the Ministry, to Messrs. Proffitt, Proffitt and Proffitt, Aeronautical Tailors, Savile Row, W. :—

Dear Sirs,— With reference to my order for five tunics, three breeches and six slacks, will you please note that these garments are now required to be in pink georgette and no longer in ninon?

With regard to the belt on the tunic I hear the material and colour are shortly to be changed again, but as it will in this case be possible to "wear out" the existing tunics, would you kindly supply three extra belts—one of black and white overcheck, one of green charmeuse with the lace insertions, and the other of white buckskin?

In this way I shall be able to utilise each pattern as occasion may necessitate.

As to the cap-badge, I have been making inquiries and have heard to-day that I shall have to wear a 1/100-scale kiwi, in full flight, of nickel; but as nothing has been decided yet, please hold the cap back until you hear further from me.

Yours faithfully,

Fawcett Gear.

P.S.—Kindly note that I need a second bar to my O.B.E.

A GREAT LOSS TO FRANCE.

A message from Paris dated Sept. 20th states that the well-known French aviator and athlete, Maurice Boyau, is missing. He was recently made Officier of the Légion d'Honneur, with the inscription, "the bravest pilot and the most complete athlete, who makes French aviation illustrious." At the commencement of the war he was a second-class private, and later entered the Service d'Aviation Militaire, and was promoted Lieutenant. He held the Croix de Guerre with 12 palmes, the Médaille Militaire, and was a Chevalier of the Legion d'Honnour. He also held the British D.S.O. Lt. Boyau had 35 German machines to his credit.

PARACHUTES AGAIN.

The "Times" correspondent with the American Army in France writes on Sept. 20th :—

French aeroplane patrols operating with the First American Army yesterday encountered an entirely new type of German machine, which is extremely speedy and quick in manœuvring.

Three French aeroplanes attacked three enemy aeroplanes, one of which was driven down out of control, but the observer was seen to jump and descend safely by parachute. It is believed that all the best German air fighters are equipped with parachutes, so that if their machines are damaged they can escape.

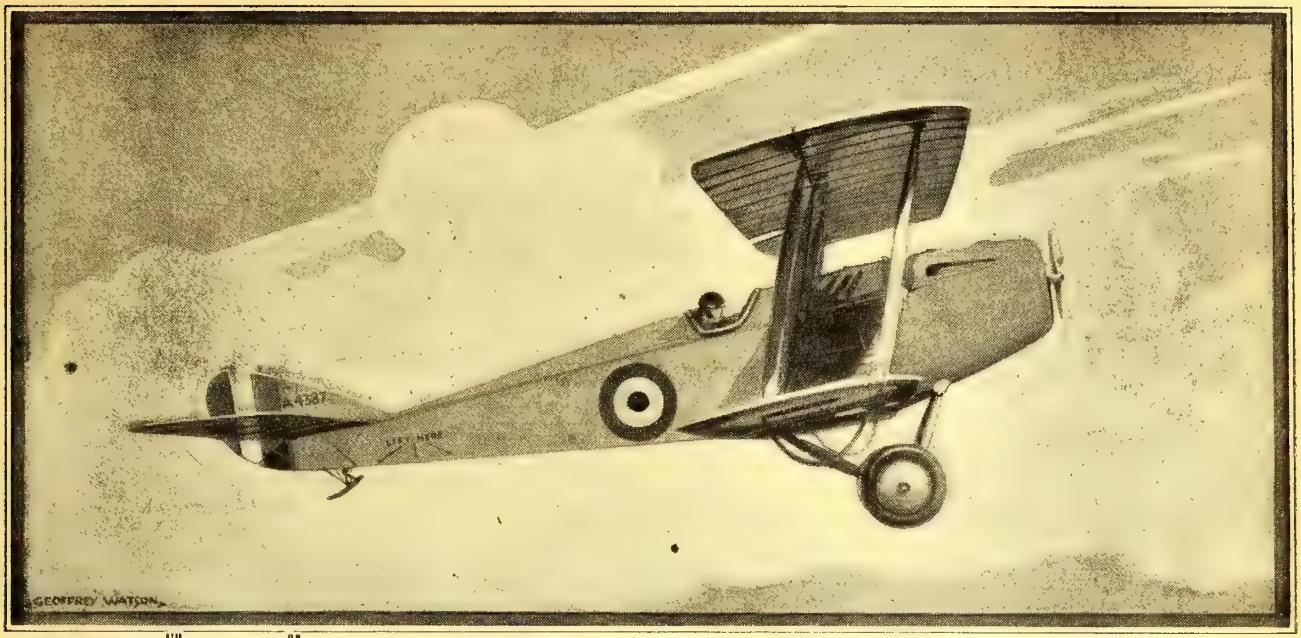
Mr. J. F. B. Livesay, Canadian correspondent on the Western front, writes on Sept. 17th :—

Last night a large German bomber was brought down in flames, and the crew landed by parachutes in the Canadian lines. Again to-day an enemy machine crashed, but its crew saved their lives by parachutes

[Some day we shall have them, too. But we should have them quicker if some of our high-class technical gentlemen were to make a few trips over the lines in slow machines without parachutes.—Ed.]

CANADIANS IN THE R.A.F.

The " Times " correspondent at Toronto stated on Aug. 15th that the number of Canadians in the R.A.F. is said to be 13,495.





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ANOTHER AIR MINISTRY APPOINTMENT.

It is stated that Mr. Algernon E. Berriman has been appointed Deputy-Controller of the Technical Department, Department of Aircraft Supplies, Minister of Munitions (and Air Ministry).

Mr. Berriman was well known before the war as a technical writer on automobiles and aircraft. During the war he joined the Daimler Motor Co., of Coventry, as technical expert. He is also a member of the Civil Aerial Transport Committee.

One is naturally pleased to see a confrère of the ink-using trade thus exalted, and one wishes Mr. Berriman every good fortune in his new job. At the same time, one bespeaks for him the kindly consideration of the practical users and producers of aircraft, for his position is one beset with difficulties.

Mr. Berriman's undoubted ability has in the past manifested itself on the theoretical rather than on the practical side of aviation. While he did not, as some aver, actually invent the sport of chasing the elusive *x*, *Kx*, *Ky*, and other such fearful wild fowl, he was one of the leading exponents of the game, and he revelled in charts, curves, statistics, and diagrams such as delight the heart of the high-browed scientist, but cannot be understanded of the people, and certainly have not advanced notably either the output or the performance of aeroplanes. The scientists concerned with aviation have always succeeded in proving satisfactorily why aeroplanes fly, but they have seldom improved their flying, nor have they been quick to recognise the advantages of new types which required new or amended theories to explain their enhanced performances.

Now, one of the chief duties of a Controller, or Deputy-Controller, of the Technical Department, is to accelerate to the uttermost the putting into production of new and improved aeroplanes and engines, and on the personal ability and sound judgment of either or both of these officials depends primarily whether our active-service aviators are constantly equipped with better machines than those of the enemy.

A Deputy-Controller who insisted on keeping on experimenting and testing and tabulating performances and obtaining data and verifying figures and checking results and correcting observations, and so forth, might easily hold up the production of a new type for months, and thus let the enemy get ahead again. On the other hand, a Deputy-Controller who was prepared to back his own judgment and to stand or fall by his practical knowledge, and the results of a few practical tests by pilots with war experience, could keep us consistently months ahead of the Hun in the air. When one is up against energetic practical people like the Germans, one has no time to waste on *x*-chasing, and compiling statistics, and such-like vanities. The people at the Front want continually new and better machines.

It remains to be seen which rôle Mr. Berriman will elect to play. If he chooses to be the purely practical man, there is a great future awaiting him. There are machines and engines and other things actually in existence which ought to have been on active service before now, and he can do great work for active service aviators by getting the best equipment out to the Front forthwith. If, on the other hand, he chiefly desires to conserve his reputation as a pure scientist, and takes no risk of losing it by doing anything practical, he will doubtless reach the end of the war with much official honour.

It is for Mr. Berriman to decide between such honours and doing his best for the men who are fighting in the King's Service, and one wishes him every good fortune in his efforts to do the right thing.—C. G. G.

AN AERIAL CAPTURE.

The following incident, briefly described, is taken direct from the latest record from the battle zone:—

Two flying officers, whilst on a counter-attack patrol recently, have had an adventure, rare even for the Royal Air Force.

Flying fairly low, those officers became aware that they were being fired upon from a trench and a sunken road near by. The pilot dived and saw a party of Germans—afterwards ascertained to number no fewer than 56—sheltering there. He at once replied to their fire with his fixed gun, killing one and wounding three others. Apparently panic-stricken, the Germans ceased firing and hoisted a white handkerchief in token of surrender.

As there were no British infantry in the immediate vicinity, the pilot thereupon descended to 50 feet and ordered the Germans out of the trench. They obeyed, and, rounding up the party, the British pilot headed them off in the direction of his own lines. Flying low and circling round them to ensure that none escaped, the pilot and observer carefully shepherded the party across No Man's Land and handed them over to the nearest party of British troops. This done, they returned and resumed their patrol.

THE ROYAL CANADIAN AIR SERVICE.

It is reported by the "Times" that the establishment of the Royal Canadian Air Service has been completed. The system of discipline will be that existing in the Royal Canadian Navy.

ADAM AND THE AIR MINISTRY.

From the "Daily Chronicle" of Sept. 20th:—

Lovers of old London recently heard with surprise the rumour that the Air Board (*sic*) intended to commandeer for offices a number of the old Adam buildings in Adelphi. An official of the Office of Works made yesterday a reassuring statement on the subject to a representative of the "Daily Chronicle."

The Air Board already have possession of the Adelphi Hotel and a few adjoining buildings in John Street, which are used as billets for members of the staff. The Office of Works have arranged that these members of the staff shall be billeted elsewhere, and that the buildings shall in future be used as offices. It is possible that still further room may be required, and in that case No. 1, Adam Street, adjoining the back of the Hotel Cecil, and used partly by business and partly by residential tenants, will be taken.

"Everybody may rest assured," said the official, "that no harm will be done to the building. None of the decorations will be touched, and if it is considered that there is the least likelihood that they will be damaged, they will be boarded up and carefully protected."

[Considering that the "Daily Chronicle" is always so anxious to correct the slightest inaccuracy of statement on aerial matters in Parliament, it might at least take sufficient interest in the subject itself to note that there is no such thing as the "Air Board." As that body ceased to exist at the end of 1917 the "Chronicle" seems to be a little out of date in its aeronautical ideas. One hopes that its other news and political ideas are more up to date.—Ed.]

TO WHAT BASE USES!

The "Daily Express" published on Sept. 20th, under the above heading, the following paragraph:—

The military authorities have claimed "a grey-haired taxi-driver" on the ground that the Army wants skilled men. Of course it does. So do the mines and the shipyards and the engineering shops. Every employer needs skilled men, and a nation with a proper educational system would possess no men who were not skilled. The trouble with the Army is that when it gets skilled men it often refuses to use their skill. We know of a little squeaker of a tailor, a good workman and a famous arguer. The Army called him up. "What, in heaven's name, can I do in khaki?" he asked. The reply was that a dozen expert tailors were wanted at once by the Royal Air Force. The little man was a patriot. He was delighted to feel that he could really help his country. He put on his khaki with pride. And now he is working on a motor-lorry! We are dreadfully afraid that the "grey-haired taxi-driver" will be employed as a tailor.

[One knows of a specialist in R.F.C. officers' uniforms and kit who was for a year, and may still be, washing floors in R.F.C. officers' messes.—Ed.]

A CONTRADICTION.

The Chairman of the St. George's Liberal and Radical Association writes to the "Daily Telegraph" on Sept. 20th:—"Please allow me to contradict the statement in the Press that Capt. Wedgwood Benn, D.S.O., D.F.C., M.P., has been rejected as candidate for the new division. Intense feeling has been stirred amongst all parties in the constituency by what appears to be an attempt to take advantage of Capt. Benn's continued absence at the front (where he has rendered distinguished service) to oust him from a constituency he has won in four fights and represented for over 12 years."

AERIAL ACTIVITY IN THE ORIENT.

It is reported that during the week ending Sept. 15th, Italian and British Naval Air Forces have again been very active on the Adriatic and Albanian front. The following places were bombed:—Caorle (Lower Livenza), Cattaro, San Giovanni di Medua, Alessio, Durazzo, the Monastero di Kolcoldin, Ragosina.

AN INTERESTING PICTURE.

At the exhibition of photographs arranged by the Italian Foreign Action Bureau at the Mendoza Galleries, Old Bond St., a photograph is shown of Major D'Annunzio and his pilot in the aeroplane which took them to the raid on Vienna. Along with this goes an enlargement of the view of Vienna taken by D'Annunzio from the air, with his famous leaflets—for such, it is supposed, are the white spots on the picture—fluttering to earth.

Judging by newspaper paragraphs this photograph appears to have been taken by the Italian aviator, Antonio Locatelli, who is said to have been shot down on Sept. 15th while on reconnaissance over Fiume. Locatelli held three Italian silver medals for valour as well as the Italian, French, and Belgian War Crosses.

A CHANGE OF ADDRESS.

The publishing office of The Aeroplane on and after 1st October will be at Union Bank Buildings, Carey Street, Chancery Lane, W.C.2, where all communications relating to publishing and accounts should be addressed.

The Editorial and Advertising offices remain as heretofore at 166, Piccadilly, W.1.

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GEOFFREY WATSON

FROM THE "LONDON GAZETTE."

AIR MINISTRY, Sept. 10th.

His Majesty the King has been graciously pleased to confer the undermentioned rewards on Officers and other ranks of the Royal Air Force, in recognition of gallantry in flying operations against the enemy :—

AWARDED A BAR TO THE DISTINGUISHED SERVICE ORDER.

Lt. (Temp. Maj.) RAYMOND COLLISHAW, D.S.O., D.S.C., D.F.C. (late R.N.A.S.)

A brilliant squadron leader of exceptional daring, who has destroyed 51 enemy machines. Early one morning he, with another pilot, attacked an enemy aerodrome. Seeing three machines brought out of a burning hangar he dived five times, firing bursts at these from a very low altitude, and dropped bombs on the living quarters He then saw an enemy aeroplane descending over the aerodrome; he attacked it and drove it down in flames. Later, when returning from a reconnaissance of the damaged hangars, he was attacked by three Albatros Scouts, who pursued him to our lines, when he turned and attacked one, which fell out of control and crashed. D.S.O. gazetted Aug. 11th, 1917.)

Lt. (Hon. Capt.) BERNARD ARTHUR SMART, D.S.O. (Sea Patrol).

Led his flight for 160 miles over sea and land, and destroyed by bombs an important enemy airship shed. This service was carried out under exceptionally difficult circumstances, requiring great skill, and was most creditably performed. (D.S.O. gazetted Nov. 2nd, 1917.)

AWARDED THE DISTINGUISHED SERVICE ORDER.

Lt. (Hon. Capt.) WILLIAM FORSTER DICKSON (Sea Patrol).

Displayed great skill and gallantry on the occasion of a long-distance bombing raid. He succeeded in dropping bombs on an airship station from a low altitude with destructive effect, and although subjected to severe fire from the enemy obtained valuable information.

Capt. (Temp. Maj.) DAVID EDMUND STODART, D.F.C.

Whilst commanding a flight of the Royal Air Force the whole of the flying officers had become incapacitated through sickness or wounds, and their duties were then performed by himself, in addition to his administrative work as commanding officer. During this period Maj. Stodart dropped 115 bombs on the enemy's position, exposed 326 negatives over enemy territory, and acted as observer for 163 rounds of our heavy artillery. In a period of 21 days this officer was 37 hours in the air, performing all the duties of an entire flight, a record which it would be difficult to surpass.

AWARDED A SECOND BAR TO THE DISTINGUISHED FLYING CROSS.

Lt. (Temp. Capt.) ARTHUR HENRY COBBY, D.F.C. (Aust F.C.)

One evening this officer, in company with another machine, attacked five Pfalz Scouts, destroying two; one fell in flames, and one broke up in the air. The officer who accompanied him brought down a third machine out of control. While engaged in this combat they were attacked from above by five triplanes. Displaying cool judgment and brilliant flying, Capt. Cobby evaded this attack and returned to our lines in safety, both machines being undamaged. A determined and most skilful leader, who has destroyed 21 hostile machines or balloons, accounting for three machines and two balloons in four days. (The announcement of award of first Bar is also contained in this Gazette; D.F. Cross was gazetted on Aug. 3rd, 1918.)

AWARDED A BAR TO THE DISTINGUISHED FLYING CROSS.

Lt. WILLIAM GORDON CLAXTON, D.F.C.

This officer is conspicuous for his courage in attack. Recently in one day he destroyed six enemy aeroplanes—four in the morning and two in the evening. In 13 days he accounted for 14 machines. His utter disregard of danger inspires all who serve with him. (D.F.C. gazetted Aug. 3rd, 1918.)

Lt. (temp. Capt.) ARTHUR HENRY COBBY, D.F.C., Aust. F.C.

An officer whose success as a leader is due not only to high courage and brilliant flying, but also to the clear judgment and presence of mind he invariably displays. His example is of great value to other pilots in his squadron. During recent operations he shot down five machines in eleven days, accounting for two in one day.—(D.F.C. gazetted Aug. 3rd, 1918.)

Lt. (Temp Capt.) JAMES IRA THOMAS JONES, M.C., D.F.C., M.M.

A gallant officer who in the last three months has destroyed 21 enemy aeroplanes. On one occasion he attacked a Halberstadt two-seater, which was escorted by two scouts. On his approach the scouts deserted the two-seater, which he shot down in flames. He then pursued the two scouts, one of which he destroyed. (M.C. will be gazetted later, D.F.C. gazetted Aug. 3rd, 1918.)

Lt. (Temp. Capt.) EDGAR JAMES MCCLAUGHRY, D.F.C. (Aust. F.C.)

In the short space of one month this officer has destroyed 10 enemy aeroplanes and balloons. He has organised and carried out numerous raids on the enemy, frequently at very low altitudes. Altogether he has destroyed 15 aeroplanes and four balloons. Early one morning he crossed our lines to attack a balloon which he had previously located. As soon as daylight allowed he dived and opened fire on the balloon, which was on the ground, descending to within 50 ft. of it. The balloon burst into flames. He then attacked some horse transport, dropping bombs and firing some 300 rounds at 1,500 ft. altitude. (The award of D.F.C. is also contained in this Gazette.)

Lt. (Temp Capt.) JOHN STANLEY FLEMING MORRISON, D.F.C.

A distinguished and zealous officer whose success in carrying out photographic reconnaissances is marked. He has also on several occasions led his flight on long-distance bombing raids, displaying sound leadership and powers of endurance. (D.F.C. gazetted June 3rd, 1918.)

AWARDED THE DISTINGUISHED FLYING CROSS.

Lt. CHARLES TORR ANDERSON.

An exceptionally skilful and intelligent observer, who on numerous occasions has most successfully directed artillery fire on hostile batteries, transport and massed infantry. His reconnaissance reports also have been most valuable and accurate, and of the greatest assistance to our raiding parties. Recently in 24 hours this officer was in the air for over seven; during this time he directed fire on four hostile batteries, all of which were silenced, and three heavy explosions were caused. He also reported by zone call 10 other batteries, good results being obtained on each position. In addition, he carried out two valuable reconnaissances of enemy wire entanglements at low altitudes.

Lt. (Temp. Capt.) SYDNEY ANDERSON (Sea Patrol).

In an engagement between three of our machines and seven of the enemy this officer displayed remarkable courage and determination. Wounded early in the fight and suffering great pain, he continued the action, and drove down one hostile aircraft, causing it to make a very bad landing.

Lt. (Hon. Capt.) THOMAS COCHRANE ANGUS (Hon. Art. Co.)

A gallant and skilful officer, who has taken part in 11 long distance night bombing raids. On one of these his machine alone, out of the five detailed, reached the objective. The weather conditions were most difficult; despite this, and in face of severe anti-aircraft fire, he successfully bombed his target.

Lt. GORDON FRANK MASON APPS.

A bold and skilful aviator who in recent operations has destroyed six enemy aeroplanes, accounting for two in one flight. He displays marked determination and devotion to duty.

Lt. OWEN MORGAN BALDWIN.

A gallant and skilful pilot who has on many occasions attacked troops and transport at low altitudes. Recently he encountered 12 enemy aeroplanes, two of which he crashed. He has, in addition, accounted for five other machines, showing at all times fearlessness and resource.

Capt. ARTHUR THOMAS BARKER (Sea Patrol).

Has led flights of seaplanes on long-distance reconnaissances, attacking hostile aircraft wherever found. He has set a fine example in gallantry and determination to all serving with him.

Lt. JOHN ROSS BELL (Dorset Regt.)

This officer is an exceptionally gallant and determined pilot, who has taken part in 37 raids, five of which he has led On a recent occasion, the formation of which he was leader was attacked by 12 aeroplanes. He fought his way to his objective and successfully bombed it. On the return journey continuous fighting took place, and three enemy aeroplanes were driven down.

Lt ROBERT STEVENSON BELL.

This officer, while carrying out observation service from a balloon, was subjected to heavy and continuous shell fire for over 2½ hours, his balloon being punctured in nine places; despite this he continued his observation. On several previous occasions he has displayed equal coolness and disregard of danger, carrying on his observation service in face of heavy hostile fire.

Lt. (Temp. Capt.) WILLIAM WEDGWOOD BENN, D.S.O. (London Yeo.)

A gallant observer of exceptional ability. After setting out on a bombing raid, the Scout machines assigned to act as an escort became separated, and it then became necessary for the bombing planes to proceed on their task without support. Capt. Benn's machine took the lead, followed by three other bombers, and succeeded in dropping his bombs (direct hits) on an enemy aerodrome. On the return journey the bombing machines were attacked by several enemy scouts, which were eventually driven away. Recently, this officer organised and carried out a special flight by night over the enemy's lines, under most difficult circumstances, with conspicuous success. He has at all times set a splendid example of courage.

Capt. ERIC BOURNE COULTER BETTS, D.S.C. (Sea Patrol).

An observer officer of great skill who has carried out over 20 long-distance photographic reconnaissances during the past four months, and in conjunction with his pilot has brought home about 1,000 photographs of enemy positions of inestimable value, in addition to destroying eight enemy machines.

Lt. GEORGE HOLYOAKE BOX.

This officer has taken part in 18 long-distance night bombing raids and 10 long-distance night reconnaissances, at all times showing exceptional keenness, untiring energy and devotion to duty. One night he carried out a very important reconnaissance lasting three and a half hours, bringing back most valuable information. Immediately on his return he proceeded on a bombing raid; having found his objective, he descended to a low altitude and successfully bombed the target. He was in the air that night six hours.

Lt. ALBERT JAMES ERNEST BROOMFIELD.

This officer shows great determination and skill in carrying out night reconnaissances, frequently under adverse weather conditions and at very low altitudes. During last month he was engaged in

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eight most successful reconnaissances. On two consecutive nights when owing to the darkness he was compelled to fly at about 500 ft. altitude, he located and bombed with success an important railway junction.

Lt. Colin Peter Brown (Sea Patrol).
Was engaged in a bombing raid on an enemy seaplane base by night, and dropped his bombs from a height of 500 ft., causing considerable destruction. Shortly afterwards he bombed an enemy aerodrome in daylight, also from a height of 500 ft., and then descended to 300 ft. and destroyed an enemy machine. On arriving at his aerodrome 59 bullet-holes were found in his machine. He has since then destroyed two enemy aeroplanes. Lt. Brown has been engaged in several other aerial fights, and has proved himself a gallant and resourceful flight leader.

Lt. Richard Claude Cain.
By his skill and initiative as an observer this officer has on many occasions directed fire on enemy artillery, wagon lines and convoys, causing serious damage. His work has been most valuable, carried out at times under very difficult conditions. On a recent occasion he successfully bombed a bridge, obtaining a direct hit at a low altitude.

Lt. (Temp. Capt.) John Foster Chisholm, D.S.C. (Sea Patrol).
[illegible] and successful flight commander. He has led his formation in 25 raids in a period of 30 days, generally to a distance of 25 miles over the lines. On a recent occasion he encountered seven enemy aircraft whilst he was engaged in bombing a particularly dangerous enemy position. He destroyed one enemy machine, and his formation accounted for three more. All our machines returned safely.

Lt. Leonard Arthur Christian (late R.N.A.S.).
Since joining his squadron this officer has taken part in 47 bomb raids, displaying at all times keenness and determination, and rendering his pilot most valuable support. He has accounted for four enemy aeroplanes, destroying two, and driving down two out of control.

Lt. Henry Edward Clark (Sea Patrol).
An officer of exceptional skill and determination as observer and bomb-dropper. He has been engaged on 30 raids, and recently obtained direct hits on a great enemy war factory which caused immense explosions and fire therein.

Sec. Lt. George Brenton Coward (Sea Patrol)
A very efficient pilot and able leader who has done most valuable service, displaying at all times the greatest courage and devotion to duty. When attacking lock-gates and shipping in an enemy port he sunk a hostile destroyer, obtaining a direct hit on its stern.

Capt. Bernard Charles Henry Cross (Sea Patrol).
Has set a splendid example to young pilots by his gallantry in going up in any weather when the necessity so demands. Capt. Cross has carried out a vast number of reconnaissance patrols in hostile waters, and has attacked submarines on many occasions.

Capt. Cyril Marconi Crowe, M.C.
This officer has been engaged on active operations over the lines for over 12 months, and has accounted for 10 enemy aeroplanes. He is a most successful leader, distinguished for skill and bravery. On a recent occasion he, accompanied by two other machines, attacked an enemy formation consisting of four biplanes and one triplane. Having destroyed a biplane he engaged the triplane at close range and destroyed that also.

Lt. (Temp. Capt.) Philip Hildersley Cummings (Seaforth Highrs.).
This officer has carried out over 100 night bombing raids, often under most adverse weather conditions and in face of heavy hostile fire. On three consecutive nights he bombed two enemy aerodromes, obtaining direct hits at 1,000 ft. altitude. On another raid, owing to engine trouble he was unable to climb over 2,000 ft. he nevertheless reached his objective. On all occasions this officer displays marked determination and courage.

Lt. Douglas Darby (Scottish Rifles).
This officer has taken part in 24 long-distance night raids, displaying at all times remarkable determination and bravery. During recent operations he played a very prominent part in two successful night raids. In one he descended to between 500 and 150 ft. altitude, getting well over the target to ensure his bombs being effective, in the other he was one of the first to find his objective, and, descending to 500 ft. altitude, he dropped his bombs.

Lt. (Temp. Capt.) Francis James Davies.
During recent operations this officer has accounted for five enemy aeroplanes. Bold in attack and skilful in manœuvre, he is a valuable aviator who sets a fine example to all.

Lt. (Temp. Capt.) Richard Jeffrey Dawes.
During recent operations this officer has destroyed six enemy aeroplanes. A very gallant and courageous officer.

Lt. Samuel Dawson (Sea Patrol).
Was engaged in a long-distance bombing raid on an enemy aircraft station under very difficult circumstances, and carried out a successful attack from a low height in the face of severe enemy fire.

Lt. (Hon. Capt.) Hippolyte Ferdinand Delarue (Sea Patrol).
This officer, in a Short seaplane, accompanied by another, formed escort to machines carrying out a long-distance bombing raid. When nearing the objective both machines were attacked by a fast enemy scout, and the companion plane was forced to alight. Capt. Delarue at once followed it down, picked up pilot and observer, and returned with the two additional passengers. A brave and meritorious action, for the risk he ran was great in such close proximity to the enemy, it being extremely doubtful if his machine would rise from the water with four on board

Sec. Lt. Edward Alphonse Dew.
A keen and dashing officer, who has taken part in numerous bombing raids and photographic reconnaissances. Whilst on a bombing raid his machine, flying in rear of the formation, was attacked by five enemy scouts. Two of these he engaged at close range; at the outset he was dangerously wounded in the thigh. Despite this he continued firing his guns until he fainted from loss of blood. He succeeded in bringing down one of the scouts in flames.

Lt. (Hon. Capt.) Euan Dickson, D.S.C. (late R.N.A.S.).
Since April 17th, 1918, this officer has led 84 successful bombing raids. His leadership has been conspicuous for remarkable bravery, skill, and determination. On one raid directed against a town in occupation by the enemy he obtained seven direct hits on the railway station and four on a dump outside. Thrice on a prior date he led his flight to attack enemy billets and horse lines, descending to low altitudes and engaging enemy troops on the ground.

Capt. Grahame Donald (Sea Patrol).
An exceedingly keen and capable pilot, who has proved himself subsequently to be a skilful flight commander. Has carried out valuable escort and reconnaissance patrols, and has brought down at least two enemy aircraft

Lt. Cedric George Edwards.
The fearlessness and disregard of danger displayed by this officer in attacking enemy troops, etc., at low altitudes is most marked, and worthy of the highest praise. On one occasion in an attack on an aerodrome, to enable him to fire on the hangars he descended so low that the wheels of his machine touched the ground. He has in air combats destroyed three hostile aircraft

Capt. Albert James Enstone, D.S.C. (Sea Patrol).
Has been engaged for 18 months on active service flying (10 months as flight leader). Has destroyed 12 hostile machines and brought down six more out of control. During the past month Capt. Enstone attacked an enemy gun, which was firing on one of our crashed machines, and succeeded in blowing up the ammunition dump alongside the gun, causing a great explosion, with flames reaching to a height of nearly 300 ft.

Capt. Stanley John Fetherston (Sea Patrol).
Has been continuously employed on long reconnaissances for 14 months, during which period he has been in action many times with hostile aircraft. Capt. Fetherston has always performed his arduous duties with courage and determination. He assisted a few months back in destroying an enemy submarine.

Lt. (Temp. Capt.) Gordon Fox-Rule
Whilst on a bombing raid this officer dived to 100 ft. and obtained a direct hit on a bridge, completely destroying it. Seeing a body of the enemy on the bank of the river he attacked them, causing them to disperse in disorder. He was then attacked by five biplanes; these he drove off, though his observer had been hit twice, and he landed safely at a French aerodrome. In all, he has taken part in 30 bomb raids and 10 photographic reconnaissances, invariably displaying a marked offensive spirit.

Lt. (Temp. Capt.) Reginald George David Francis (Aust. F.C.).
During two consecutive days this officer carried out most valuable work in ranging on batteries. Flying 8½ hours the first day and four hours the second, he successfully ranged our artillery on seven hostile batteries. In co-operating with our artillery he shows conspicuous bravery and marked ability.

Capt. John Osborn Galpin, D.S.C. (Sea Patrol).
A skilful and gallant pilot, who has performed valuable services in attacks on enemy aircraft.

Capt. James Lindsay Gordon (Sea Patrol).
A pilot of great experience, initiative, and skill. Has led formations over the seas and attacked with success enemy aircraft in their own area. Capt. Gordon has been instrumental in saving life in disabled seaplanes on several occasions, and whenever any arduous duty has to be done he is always to the fore to carry it out.

Lt. John Sharpe Griffith.
During the last few months this officer has destroyed three enemy aeroplanes and assisted in bringing down a fourth; he has, in addition, driven down two balloons and shot down two machines out of control. Whilst leading his patrol at 11,000 ft. altitude he observed three enemy aeroplanes at 2,000 ft.; he immediately dived and led his patrol to the attack, destroying two of the machines, one of which he accounted for himself. A gallant and determined officer

Lt. William Grossart.
During the last two and a half months this officer has carried out 27 successful bombing raids and 25 special photographic reconnaissances, his services on the latter duty being exceptionally valuable. This officer possesses a fine spirit of determination; neither strong opposition nor adverse weather conditions deters him from achieving his object.

Lt. Alfred John Haines.
During the past three months this very gallant pilot has destroyed five enemy machines, and earlier in the year he crashed another He was killed in action on Aug. 10th, 1918.

Lt. (Temp. Capt.) George Henry Harrison (Middx. R.).
A gallant officer of great initiative and resource, who has carried out seven successful night reconnaissances and 16 night bombing raids during recent operations. One night when on reconnaissance he remained in the air two and a half hours, despite the fact that his engine was cut out thrice and his machine badly shot about.

Lt. Thomas Sinclair Harrison.
When on wireless interception duty this officer engaged three enemy machines, shooting down one in flames. He was then attacked by three scouts and a two-seater; the latter he shot down. During the last few weeks he has further accounted for three hostile aeroplanes and a balloon, displaying vigour and gallantry in attack.

Lt. (Hon. Capt.) Edwin Tufnell Hayne, D.S.C. (late R.N.A.S.).
During the recent enemy offensive this officer carried out 48 special missions. Flying at extremely low altitudes he has inflicted heavy casualties on massed troops and transport. In addition he has accounted for 10 enemy machines, destroying three and driving down seven out of control; in these encounters he has never hesitated to engage the enemy, however superior in numbers. On one occasion he observed 10 hostile aeroplanes harassing three Dolphins; he attacked three of the enemy, driving one down in flames

Capt. Richard Hilton, M.C. (R.G.A.).
An officer who shows remarkable skill and courage in co-operating with our artillery, and in carrying out photographic reconnaissances. He also proved himself a very gallant leader on a recent raid, when he led two low patrols over the lines, attacking with machine-gun fire and heavily bombing enemy reserves. The machine in which he was flying was rendered useless for further service, so intense was the hostile aircraft fire

Capt. (Temp. Maj.) Thomas Hinshelwood (Sea Patrol).
A most efficient squadron commander. With great ability and judgment he has led his squadron on photographic and long-distance bombing raids, obtaining valuable information. The high standard of efficiency attained by his squadron is largely due to his personal influence.

Lt. (Temp. Capt.) Jeffrey Batters Home-Hay, M.C. (Arg. and Suthd. Highrs).
This officer displayed admirable coolness and resource while leading a raid on an enemy railway station. His formation was heavily attacked by seven aeroplanes, but, keeping it well in hand, he fought his way to his objective; proceeding well over the station, he successfully bombed it. In the course of the severe fighting two hostile machines were shot down out of control, one of which he himself brought down. He has taken part in eight other raids, and his consistent gallantry is a valuable asset in maintaining the moral of his new squadron.

Lt. (Temp. Capt.) Cedric Ernest Howell.
On a recent occasion this officer, leading his patrol of three machines, attacked nine enemy aeroplanes, destroying six and driving down one out of control; he himself accounted for two of these. On a former occasion he destroyed three enemy aeroplanes in one flight. He is a fine fighting officer, skilful and determined.

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Lt. Paul Thayer Iaccaci.
A bold and successful fighter, who on four offensive patrols has accounted for six enemy aeroplanes; two he shot down himself, and four were destroyed with the assistance of his observer. In these several encounters the formation in which Lt. Iaccaci was serving was engaged against heavy odds.

Lt. (Hon. Capt.) William Douglas Jackson (Sea Patrol).
Led his flight in a long-distance bombing raid on an enemy aircraft station under very difficult circumstances, and carried out a successful attack from a low height, in the face of severe enemy fire.

Lt. John Kingsley Jeakes (Sea Patrol).
A gallant officer who has taken part in numerous long-distance reconnaissance and bombing raids. While on one of the latter he destroyed an enemy seaplane on the water, obtaining two direct hits.

Lt. (Temp. Capt.) Norman Cyril Jones (R.F.A., T.F.).
A gallant and skilful patrol leader who has proved successful on many occasions against numerically superior enemy formations. Capt. Jones has personally destroyed six enemy machines this year.

Lt. Gordon Sheppard Jones-Evans (Aust. F.C.)
On returning from a raid on enemy rolling stock this officer observed an enemy two-seater machine below him; engaging it, the machine dived vertically and crashed. He was then attacked by a second two-seater; into this he fired a very short burst and it also spun down and crashed. In this engagement Lt. Jones-Evans was wounded, but, though faint from loss of blood, he succeeded in reaching our lines, where he crashed. In the last few weeks he has destroyed three two-seaters and brought down one balloon in flames.

Lt. (Hon. Capt.) William Lancelot Jordan, D.S.C. (late R.N.A.S.).
A brilliant and most gallant leader who has already been awarded the D.S.C. and Bar for distinguished services and devotion to duty. He has led numerous offensive patrols into action, displaying at all times marked ability, determination, and dash. He is an ideal squadron commander who has personally accounted for 25 enemy machines.

Lt. Solomon Clifford Joseph (Sea Patrol).
A gallant pilot who has accounted for eight enemy aircraft within the past four months. On many occasions the enemy were numerically superior to Lt. Joseph's patrol, but this did not prevent his attaining success.

Lt. (Temp. Capt.) Noel Keeble, D.S.C. (Sea Patrol).
This officer (with an observer) has obtained 1,300 invaluable photographs of enemy positions miles behind the lines, and has brought home extremely important new information during this period. He has destroyed eight enemy machines, including one biplane, during the past month. Capt. Keeble is a most capable and gallant flight commander.

Lt. (Temp. Capt.) Dennis Latimer, M.C.
When leading an offensive patrol this officer displayed great skill and bravery. Having shot down a scout in flames, he immediately engaged a second, which he destroyed after a short combat. In addition, he has accounted for four other machines.

Lt. (Temp. Capt.) Frederick Andrew Laughlin.
While bombing an important railway station the formation, of which this officer was leader, was attacked by about 20 enemy scouts. In the engagement that ensued two enemy aeroplanes were destroyed and a third driven down out of control. These results were largely due to his excellent leadership. He has taken part in 40 bomb raids, the objectives of many being far over the enemy lines. His knowledge of navigation and skill as a leader have been invaluable in enabling the formation to reach the objectives.

Lt. (Temp. Capt.) Gwilyn Hugh Lewis (N'ptonshire R.)
It is largely due to this officer's ability and judgment as a flight leader that many enemy machines have been destroyed with very few casualties in his formation. He is bold in attack, and has personally accounted for eight enemy aircraft, displaying marked disregard of personal danger.

Capt. (Temp. Maj.) Gerald Edward Livock (Sea Patrol)
Has rendered valuable services on numerous occasions on reconnaissance patrols in enemy waters, in attacks on hostile seaplanes, and in connection with anti-submarine patrol work.

Lt. (temp. Capt.) Edgar James McClaughry (Aust. F.C.).
Early one morning this officer left the ground and, meeting an enemy two-seater 10 miles over the lines, he engaged and destroyed it. He was immediately attacked by five scouts; these he outmanœuvred, destroying one and driving the remainder down. He is a determined and successful scout leader, who in recent operations has accounted for nine enemy machines, in addition to three others and one balloon when serving with another squadron.

Lt. (Temp. Capt.) George Edward Henry McElroy, M.C., D.F.C. (R.G.A.).
In the recent battles on various army fronts this officer has carried out numerous patrols, and flying at low altitudes has inflicted heavy casualties on massed enemy troops, transport, artillery teams, etc., both with machine-gun fire and bombs. He has destroyed three enemy kite balloons and 43 machines, accounting for eight of the latter in eight consecutive days. His brilliant achievements, keenness, and dash have at all times set a fine example, and inspired all who came in contact with him.

Lt. Christopher McEvoy.
A gallant pilot who has destroyed six enemy machines in a few months. He displays great determination in his attacks in high or low flying, and in bombing attacks over the enemy's lines.

Lt. Clifford McEwen, M.C. (Can. Inf., Res. Bn.).
A skilful and fearless officer who in three weeks destroyed five enemy aeroplanes. (Notification of this award appeared in "Gazette," July 2nd, 1918.)

Lt. (Temp. Capt.) Evans Alexander McKay, M.C.
This officer led a raid on an important railway station; during this operation, which was most successful, 24 hostile aircraft attacked his formation. In the engagement he displayed fine leadership and skill. Three of the hostile machines were destroyed and one driven down. He is an exceptionally good formation leader, and his determination to reach his objective is only equalled by his coolness and courage when attacked.

Lt. (Temp. Capt.) Donald Roderick MacLaren, M.C.
Accompanied by two other pilots, this officer attacked four enemy aeroplanes; all of these were destroyed; he himself fought two down to within 200 ft. of the ground, destroying both. The two pilots who were with him each accounted for one of the remaining two. It was a well-conceived manœuvre ably carried out, reflecting credit on all concerned. This officer has in four and a half months accounted for 37 hostile aircraft and six balloons, displaying great resolution and exceptional tactical ability.

Lt. Roy Manzer.
While carrying out a solitary patrol he observed a two-seater below him; diving on it he opened fire, and following it down to 1,000 ft. caused it to land outside the aerodrome. During his return to our lines he saw a hostile kite balloon; attacking it as it was being hauled down he closed to point-blank range at 300 ft. altitude; on reaching the ground the balloon burst into flames. In addition to the above, this officer has accounted for seven enemy machines, four of which were destroyed and three driven down out of control.

Lt. (Hon. Capt.) Harold Thomas Mellings, D.S.C. (Sea Patrol).
A very gallant officer who, on a recent patrol, attacked and caused to crash an enemy two-seater. Later, on the same patrol, he was attacked by four Fokkers, one of which he shot down at a range of 10 yards; this machine was seen to crash. A second was driven down smoking. Since he was awarded a Bar to the Distinguished Service Cross, Capt. Mellings has, in addition to the above, accounted for 11 enemy machines—seven destroyed and four driven down out of control.

Lt. (Temp. Capt.) James Mitchell, M.C.
During the last few months this officer has destroyed five enemy aeroplanes, displaying at all times gallantry and devotion to duty. (Notification of this award appeared in "Gazette," July 2nd, 1918.)

Lt. Marthinus Theunis Steyn Papenfus.
This officer displayed excellent judgment in a recent raid. Keeping his formation well together, and descending to low altitude, he led them well over an enemy factory and so enabled them to use their bombs most effectively. The success of this operation was very largely due to his fine leadership. In addition, he has taken part in 18 raids as deputy leader of the formation, invariably showing the greatest keenness and devotion to duty.

Lt. Joshua Parke.
This officer has taken part in 40 long-distance day bomb raids and photographic reconnaissances. His work as an observer has been consistently good, and he displays great gallantry and determination, notably in a bombing raid when he was observer to the leader of our second formation.

Lt. (Temp. Capt.) Herbert Andrew Patey (Sea Patrol).
Whilst leading his flight on an offensive patrol eight enemy machines were encountered. Capt. Patey was cut off from his patrol by two of the enemy who got on his tail, and continued in that position until within 2,000 ft. of the ground, at which point his machine was hit in the petrol tank. Notwithstanding his serious handicap, he turned four times on his pursuers, destroying one and driving the remainder away. On previous occasions this officer has destroyed two enemy machines and brought down two more out of control, and, in company with other pilots, he has assisted in destroying or bringing down out of control five additional enemy aircraft.

Sec. Lt. William Russell Patey (Royal Irish Rifles).
For consistent good work, gallantry, and skill as an observer on long-distance bombing raids and photographic reconnaissances. During a raid three months ago his machine was heavily engaged by hostile aircraft. By very judicious management he remained master of the situation, and eventually destroyed one of the enemy machines. During the past month he has again displayed notable qualities of airmanship whilst encountering large numbers of enemy aircraft. Lt. Patey is always prepared to carry out any kind of operation entrusted to him, and the spirit he has shown when attacked has been of inestimable value to the squadron.

Sec. Lt. Desmond Philip Pogson.
In a recent long-distance bombing raid his petrol tank received a shot immediately after crossing the line, but he continued on his journey and bombed the distant objective. On the return journey very fierce fighting occurred, during which both leaders and deputy-leaders of our formations were shot down, and the remaining machines lost touch with each other. At this critical moment Sec. Lt. Pogson ordered his observer to tie his handkerchief to the gun-mounting to indicate that his was the leader's machine. He then circled over the area three times and picked up five of our machines, and in face of very hostile opposition got them into formation and brought them all safely home. The prompt action of this officer was highly meritorious, and undoubtedly saved the remaining machines, which could not have coped with the greatly superior formations of the enemy.

Lt. (Temp. Capt.) Walter George Preston.
This officer has taken part in 70 bombing raids, and has rendered most valuable service on reconnaissance duty by night. One night he carried out three most successful bombing raids on hostile rest billets, dropping his bombs and engaging the enemy troops with great effect. He sets an excellent example of skill and gallantry.

Sec. Lt. Hartly Pullan.
This officer has taken part in numerous long-distance bombing raids and reconnaissances. His work has been consistently good. On a recent occasion when on photographic reconnaissance he was attacked by three scouts; he shot one down and the other two dived away. A few minutes later he was again attacked, this time by five triplanes, one of which he shot down out of control.

Lt. (Temp. Capt.) John Steele Ralston, M.C. (Scottish Rifles, T.F.).
An intrepid patrol leader who in recent operations has accounted for three enemy machines and three kite balloons. Recently while on patrol he advanced to attack a kite balloon; on his approach the balloon party began to haul it down, but forcing home his attack he shot the balloon down in flames. In the engagement this officer was seriously wounded. Suffering great pain, he flew back to our our lines and tried to land, but fainted and crashed.

Sec. Lt. Cyril Lancelot Rayment.
This officer has taken part in 35 successful operations, and his work throughout has been distinguished by clearness, accuracy of observation, and disregard of danger, notably on one occasion when he was observer to the leader of our first formation, which was vigorously attacked by four hostile machines. In spite of this the formation was led over the target, which was effectively bombed. Subsequently the formation was attacked by five hostile machines, but owing to skilful leadership the fire of our observers was so well controlled and directed that the enemy were kept at a distance and the formation returned in safety.

Lt. (Hon. Capt.) Robert Redfern (Sea Patrol).
A zealous and very able observer who has carried out extremely valuable photographic reconnaissances on enemy country and bases. He has also taken part in many long-distance bombing raids on important enemy towns.

Lt. Norman Roberts.
This officer has destroyed three enemy machines and driven down two others out of control. He has also distinguished himself in attacking troops at low altitudes, and has carried out valuable reconnaissance service. Detailed to make a reconnaissance of an important area, he realised, on crossing our lines, that the wind was almost at hurricane strength, and that in face of such a wind his

(Continued on page 1143)

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AMERICA'S AIR EFFORT.

One View of the Question.

BY R. P. HEARNE.

A great deal of misconception and no small amount of misrepresentation prevail about America's effort in the war. I am tired of hearing "Defeatists" say America cannot give much assistance, and that the American soldier will not make good. After all, fighting is the oldest of occupations, and judged merely from the physical standpoint the young American is a finer specimen of manhood than the young German.

And if there is any headwork necessary in fighting the American is not inferior in brains to the Germans, or to the peoples who have joined with them. So why the misgiving about America unless it be part of the pro-German propagandist campaign?

The misrepresentation has been most acute with regard to the American aerial effort. At first the critics doubted the truth of the statements that the United States had voted huge sums for air work. Then it was said that America did not know how to build aeroplanes, and never would acquire the art. Finally, we were told that the air engine could not be made by the Americans, for they were unable to rise in motor engineering above the standard of the cheap and nasty motor-car!

From a long acquaintance with Americans and American industry I could have refuted these calumnies with evidence compiled by myself, but in this case I have been fortunate enough to get first-hand information on the subject from a man who has been closely connected with the present American air programme. To Mr. W. H. Workman, American representative of the Handley Page Company, I am indebted for a very clear representation of the whole situation.



Mr. W. H. Workman.

The Practical Mind.

Mr. Workman played an important part in bringing about the conversion of the American authorities to a gigantic aerial campaign, and he followed up this work by rendering valuable assistance in carrying it into being. It is comparatively easy to play the part of propagandist, but when your convert asks for practical aid in carrying out the new work it is not such a simple matter to be of help to him. Mr. Workman has assisted in both capacities.

For easily understood reasons I cannot publish all that Mr. Workman told me, although if I were at liberty to do so it would only make the Germans all the more uncomfortable. But I may say that the net effect of Mr. Workman's evidence is proof positive that America can and will strike a great aerial blow this year—a blow which will astonish many people in this country as well as in Germany.

I beg the reader not to form the idea that I interviewed Mr. Workman on the lines of an American "stunt" newspaper, or that Mr. Workman talked big in the manner of a Yankee boaster in a home-made transatlantic melodrama. On the contrary, I found that my subject was very frank about the difficulties and the possible disappointments of the new work, and I am led by subsequent developments to think that he considerably underestimated what America could do within a certain time.

I have purposely allowed a period to elapse ere publishing my interview with Mr. Workman, as I, too, wished to see how certain critical features would develop in the interval. The test of time, I am happy to say, has been a magnificent proof of America's will to succeed. The critical stage is now past in the U.S.A. air effort.

The Proper View Point.

To get a general view of the situation I must outline the movement which has made America a great power in the air to-day. It was in June, 1917, that the United States sent a Commission to Europe to investigate and report on the aerial campaign and its future. Before that time, of course, the conviction had been borne in on the more intelligent American observers that aerial warfare was destined to play a great part in deciding the whole conflict.

The inner history of the American Commission in Europe cannot be published just yet, but I may hint that in going from one Allied country to another, and investigating the opinions and preparations of each nation, the Commissioners found it a very difficult task to shape their own programme quickly and decisively. There was at that time a painful lack of co-ordination between the Allies in Europe on aerial matters, and this was but a reflection of the lack of co-ordination in war measures generally. Several disastrous affairs arose out of this confusion, until the Allies by a determined effort set their house in order.

As an instance in a small way of what the Aerial Commission had to deal with they found no fewer than thirty different types of aeroplanes offered to them in the various countries as the best types for war work. The number of "best" engines was even greater. I need hardly say that if America had de-

cided to adopt one quarter of these types it could not carry out its big programme in time.

Very wisely the American experts decided to concentrate on three types of machines, and by a most careful process of inquiry and test they picked out less than half a dozen of the European machines which seemed the best to adopt. It might not be advisable at the moment to name the machines selected, but I may say that British designs were in the overwhelming majority.

An International Affair.

If I gave the actual figures in my possession they would be a great tribute to our Aircraft Industry; but, at the same time, in fairness to our French and Italian friends, I must point out that the Americans had to consider not only the design of the machine but the matter of technical assistance, supplies, and other things. Furthermore, the Americans were not content with the slavish copying of any one model, and they have borrowed freely from the experience of all our Allies. Hence I prefer to regard the new American machines as truly international types, in which every country with us in the war has its due share of credit.

The engine trouble was even greater. Here the Americans took the bold course of blending American and European practice to produce one type. In this respect again we rendered signal service, for Mr. Claude Johnson, at the invitation of the American Government, went out to America with a staff of Rolls-Royce engineers, and with full plans of the Rolls-Royce engine. He placed the knowledge of his firm at the full disposal of the American engineers, and his own skill as a business organiser was freely given.

The Liberty motor, as the American air engine was styled, is not a Rolls-Royce, but it is a blend of the best aero-engine practice in Europe and America, in which one can trace the good work of the leading engineers.

At this juncture I can give an instance of Mr. Workman's frankness. I had heard rumours that the early Liberty engines were not a success. I suspected that there had been too many cooks, and that the engine was so embarrassingly and superfluously perfect that it did not fit with the usual run of mediocre things on this planet! Mr. Workman was quite frank with me on the matter, and showed me what the difficulties were and how they arose.

The Flies in the Ointment.

At the time of our first interview the trouble was there. On a later occasion the trouble had been mastered, and I have delayed publishing anything on the matter until I felt quite sure that the difficulties were past history. I am now able to assert on the most reliable authority, gleaned from several independent sources, that the Liberty motor is thoroughly satisfactory, and that its production is going forward on a big scale.

Indeed, the full series of tests show the new engine to be a very fine job, which is certain to make good in the war. The Americans have got the matter right now, and they are working on quantity production both of aeroplanes and engines. Elaborate precautions have been taken, I am told, against deterioration in quality, and I think we need have no misgiving as to the numbers and efficiency of the American machines which will be helping us in Europe this year.

The first American vote for air work was to the tune of £128,000,000, and the programme was put in force in November, 1917. The first call was for 22,000 aeroplanes to be ready by July, 1918, and in addition a vast organisation of aviation schools and factories was planned, so that America would send to Europe and maintain there a complete aerial fleet which would be self-supporting in every respect, even to food, fuel, and transport.

Europe's Help.

The European Industry gratefully gave every assistance, and from the Handley Page factories, for instance, Mr. Workman took out skilled workers to assist in the great campaign. In an amazingly short time the big factories had been organised for the new industry, and now the finished products of these factories are in Europe in numbers which give earnest of America's determination to keep her pledge.

The whole feat has been an amazing affair, and I think it is one of the finest achievements of the entire war. That it is not solely an American triumph I have emphatically pointed out, and for that reason it is the more precious to all of us who believe in the perpetual federation of the great civilised nations. The happy co-operation between America, Britain, France, and Italy, which has given us the great American air fleet so quickly, is a mighty portent of what these nations can do in perfect united work against the common enemy.

It is with the utmost pleasure that I take this opportunity of refuting the slanders and calumnies, and of smashing the lies, rumours, jealousies, and inuendoes which have been circulated for many months past concerning the American air effort. I have gone to a very great deal of trouble to find out the facts, and my investigation gives me complete confidence in our Allies. I believe that before 1918 is over the American air fleet will have accomplished great things, and that its work will make a profound effect on the course of the war.

SOME AERONAUTICAL FALLACIES.

3.—That the Rudder, by itself, causes a Machine to turn.

By "AFRAES."

I find that for all its simplicity and familiarity the rudder is an organ in connection with which quite a considerable amount of slipshod thinking, and as a *sequitur*, slipshod writing, is done, and, what is the more remarkable, in some cases the culprits are, at least superficially, sound upon subjects of much more advanced abstruseness.

In most text books and lectures upon elementary aeronautics the explanation of its working is given in some such way as the following: "The rudder is a vertical plane, which in normal circumstances travels edge on to the wind. When the pilot, exercising his control, sets it over either to one side or the other, it strikes the air not edge on, but at an angle. Such being the case, a pressure is produced upon it, and this force turns the machine in one direction or the other, as the case may be."

If the intention of people who express themselves in this style—the words are my own, but the meaning is not—is to tell the truth, the whole truth, and nothing but the truth, they fail in hitting any of these objects, and it would be far better for all concerned, especially the rising and knowledge-seeking generation, if they were to make a more respectable shot at one only of the three philosophic goals.

My excuse for labouring small points like the above is this, that whereas such an explanation is grossly erroneous, it is sufficiently plausible to be accepted by anyone to whom the aeroplane is a commonplace, but whose knowledge of general elementary science is about equal to that of a Cambridge B.A.

While anything remains purely scientific it is the subject of clear thinking, but the moment it becomes a familiar everyday occurrence it becomes surrounded with irritating fallacies, for the reason, as I suppose, that some human beings are congenitally incapable of straightforward mental processes, and are far more ready to embrace the most complicated falsehood than to face the simple truth.

The fallacy in the above argument is that a single force is capable of causing any body to rotate.

If rotation is required it can only be accomplished by two forces so situated that they form a couple, and this fundamental truth applies just as much to the rudder of an aeroplane as it does to a grindstone or a Catherine wheel.

But apart from that, the explanation is at once seen to have a nasty hole in it since it evidently takes no notice whatever of the position of the rudder. Position is, however, in this case nine points of the law (forgive the paranomasia); indeed, it would be quite easy, though, of course, perfectly futile, to arrange the rudder in such a place that no amount of control applied to it would affect the direction of the machine in the least.

Fig. 1 is the diagrammatic plan view of an aeroplane or boat—the conditions of one case are exactly analogous to those of the other.

AB is the body, or hull, and BC is the rudder, and the vessel is supposed to be travelling from right to left.

If the rudder meets the relative air at an angle, there is produced upon it a force PQ at right angles to it.

Fig. 1.



This may be split up, by means of the parallelogram of forces, into two forces PX and PY, one of which is transverse to AB and the other of which is parallel to it.

Of these two forces PY is in direct opposition to whatever force is providing the propulsion of the vessel, and therefore acts simply as additional resistance or drag.

PX, on the other hand, tends to move AB bodily sideways in the direction of X, and this it will actually do unless some other force is introduced to check it, or in combination with it to promote a couple.

The first tendency when the rudder is thrown over is, therefore,

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for the whole aeroplane, or ship, as the case may be, to move sideways.

The moment, however, this action begins to take place the hull, or body, meets with resistance, and thereby a transverse pressure is produced upon it, as shown in Fig. 2, in which ST represents this force.

Such being the case, ST and PX form a couple, and their tendency is to rotate the ship or aeroplane about its centre of gravity.

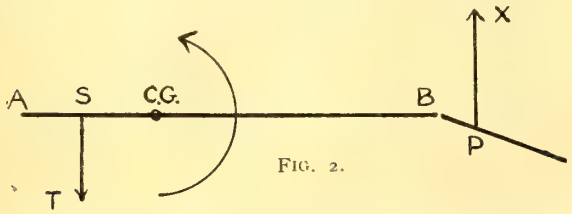


Fig. 2.

It will be noted, moreover, that this sideways movement, or "yaw," as it is called, of the ship or aeroplane as a whole must take place to a certain extent, before the rotating effect of the rudder comes into play.

Thus if a canal barge is up against a dock wall no amount of rudder will get it away, because the requisite yaw cannot be achieved, but so long as there is the least amount of clearance the rudder will give the desired result. This fact is, of course, very well realised by the helmsmen of steamships, who allow for the yaw when berthing their vessels.

The position and magnitude of the force ST, shown in Fig. 2, depends, *ceteris paribus*, on the shape and area of the body AB, and also upon the speed at which the machine starts yawing when the rudder is thrown over.

The effect of this yaw, as shown in Fig. 3, is that the body, or hull, meets the air no longer "nose on," but at a slight angle, since its resultant path is now partially diagonal.

In these circumstances the centre of pressure of the body will

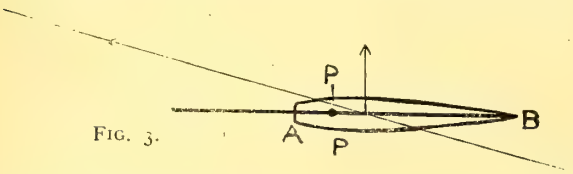


Fig. 3.

be, owing to the smallness of its angle of incidence, pretty far forward, say somewhere about the point P in Fig. 3.

If this point is forward of the entre of gravity, which, of course, is the point about which the free aeroplane rotates when the rudder is applied, then, since the force due to the rudder is behind the CG, the two forces help one another.

On the other hand, if the vertical area of the body in front of the CG were very small indeed, and that behind the CG were very very great, it would be possible to have these two forces more or less in opposition, as set forth in Fig. 4, where ST is the pressure

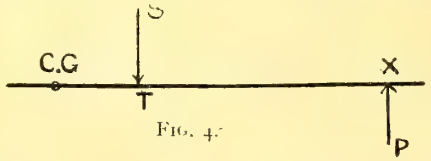


Fig. 4.

developed by the yaw and PX, the pressure immediately due to the rudder.

In this case the turning effect of the rudder is considerably mitigated by the fact that the aeroplane body has the equivalent of a very large rear fin. In short, the bigger the finnage behind the CG the less is the effectiveness of the rudder, other things being equal.

A similar consideration indicates that the finnage area in front of the CG is of great importance in its effect upon the rudder. Thus, supposing, as shown in Fig. 5, you had an aeroplane with a big forward finnage, the force ST developed upon it by the

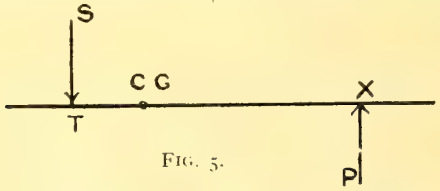


Fig. 5.

initial yaw would be very large indeed, and if the moment of ST about the CG were greater than the rudder moment, the machine would simply spin round and crash, exactly as it would if one stuck the rudder at the nose of the machine instead of at the tail.

If the rudder is at the tail end and pulled over to an angle, then the angle of incidence of the rudder itself decreases as the aeroplane yaws, but, in similar circumstances, the fin area in front tends to increase its angle of incidence with the rate of yaw, as can be instantly deduced from Fig. 3.

To return to the fallacious description of the rudder action given above, it will be seen that according to this, any controllable vertical plane, of any size, and in any position, would comply with the conditions laid down, whereas it is clear from a more careful consideration that nothing could be further from the truth.

As far as boats are concerned, anyone who has tried to steer a small motor-boat, or even a skiff, that was loaded so as to be decidedly "bows-heavy," will have had a practical demonstration as to the highly important part which finnage area and the disposition thereof has upon the rudder.

There once was a pilot of Greenwich
Who ruined a fine bed of spinach.
The reason was clear;
He was trying to steer
With a rudder too small for his finnage!

CORRESPONDENCE.

Apropos the recent articles by "Afraes," in the following letter an R.A.F. officer has the daring to joust with him. The resultant argument is distinctly entertaining:—

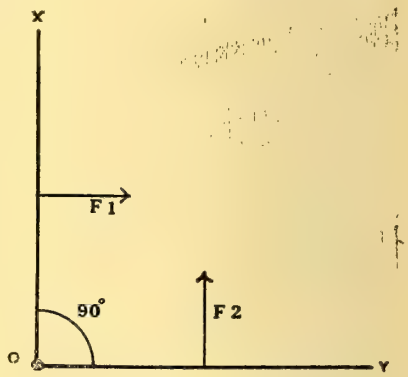
Sir,—I read with interest an article by "Afraes" on "Some Aeronautical Fallacies" in The Aeroplane of July 24th, 1918.

Although not a mathematician, or an expert theorist, I would venture to suggest that "Afraes" is almost as incorrect in both his argument and conclusion as the book he criticises.

"Afraes" states that if a dihedral-angled machine rolls over on one side "The force due to the reaction of the deflected air will obviously be exactly the same on each side."

I submit that this statement is wrong, because, as soon as the aeroplane rolls over, however slightly, to one side, the angle of incidence of the lower wing is immediately increased, while that of the wing on the higher side is decreased, not simply on account of the rolling movement, but due to the fact that the mass of the machine will continue to travel in the same direction.

To make this clearer let me exaggerate the dihedral angle and suppose the machine to have a dihedral of 45 degrees on each wing, and that the machine was disturbed to the extent indicated in the accompanying diagram.



The incidence of the wing OX would then be nil, and that of OY if anything increased as the machine fell.

Therefore the decreased lift of OX might be represented by the force of F^1, and that of OY by F^2, and since F^2 is greater than F^1, a moment in an anti-clockwise sense is immediately established about O, tending to right the machine.

This I maintain is the chief factor in the automatic stability of a dihedral-angled aeroplane, and is very much more important than the righting moment due to sideslip, which also undoubtedly exists.

In conclusion I would like to submit that if the above arguments are correct, as I believe them to be, that the dihedral angle *per se* does encourage lateral stability.

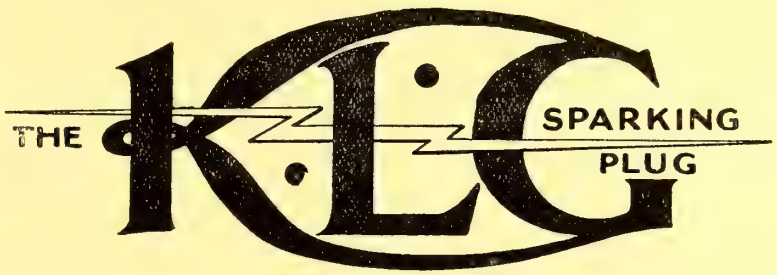
"Brass Hat."

To this "Afraes" replies:—

It is a jolly good thing that in my introduction to this series I had the foresight to cover myself by saying that it was inevitable that in trying to set other people right I should sometimes be found to be in error myself, for in my very first article I came perilously close to committing a bloomer, if I did not actually do so.

It only goes to show that I am guilty of slipshod phraseology to a certain extent, though perhaps not quite so frequently as some of those to whom these shafts of criticism are launched. I am glad, however, that my slip did not pass the eagle eyes of Aeroplane readers undetected. Thus though I have to cry "*peccavi*" I at least have this salve to my wounded vanity, that the articles have been read by someone. This is very gratifying to a technical journalist, whose lucubrations are generally more of the space-filling than the Thames-igniting type.

"Mersey Yachtsman" writes to call my attention to the fact that, in saying that the elevator of an aeroplane acted exactly like the rudder of a boat, Bolo Bertie had more sense in his noddle than I gave him credit for. I need hardly say that where I was entirely in the wrong was to use the term "boat" when I was really referring, not to a sailing vessel, but to a power-propelled ship, and "Mersey Yachtsman" is perfectly right in pointing out that "a sailing boat loses way when luffed just as



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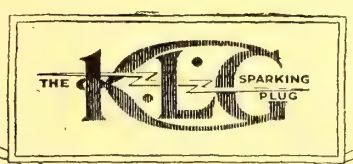
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an aeroplane does when the elevator is raised suddenly." But when he says that "neither the rudder nor the elevator is supposed to know why, or what the consequences will be," he is both incomprehensible and ungrammatical. At all events I am blest if I know what he means.

I agree that, within limits, a yachtsman would be entitled to say that he was exchanging kinetic energy for potential energy when he gave his craft a "savage luff," as no doubt the force and direction of the wind can be regarded as the equivalent, though acting in a different plane, to the force and direction of gravity.

Having pleaded guilty to the unpardonable solecism of using the word "boat," instead of "ship," I will now deal with other points in my defence. The first is that "Bolo Bertie" would obviously not know that the rudder of a sailing vessel is anything at all like the elevator of an aeroplane. His nautical knowledge, especially if he had graduated at the seafaring Universities of Oxford or Cambridge, would be based upon his experience of skiffs and penny steamers.

So long as these are the types of craft he had in mind, as I firmly contend they would be, then his analogy would be wrong. I cannot imagine that "Bolo Bertie" would know, for instance, that the course which a sailing vessel is set upon is determined by the trim of the sails, because I am perfectly satisfied that he and his type persistently believe that the course is steered by means of the rudder, which in point of fact is merely an adjustment by means of which small errors can be dealt with instead of involving the inconvenience of altering the arrangement of the sails.

I am convinced that "Mersey," or any other "Yachtsman," will concede me this point. And I am also convinced that, accepting the usual misapplication of the term "boat" by unsailorlike persons like myself, my explanation was clear and acceptable.

It only shows how careful one should be in remembering that a great many commonplace words are technical in origin. An indignant sign-painter once wrote and complained that when I said "brush," in some article or other, I really meant "pencil." And I suppose if I had said "pencil" someone would have complained that he thought I meant "black lead."

The next man to bob up and smack me over the head is an R.A.F. "Brass Hat," who takes me to task over a point in my second artitcle on the Dihedral Angle.

[*Vide* the letter at the beginning of this article.—Ed.]

I will take him "*privatim et seriotim.*" This, it will be remembered, the Eton boy construed as "several times in a private room."

"Afraes is almost as incorrect . . . as the book he criticises." If we are both wrong there must be a third alternative. What is it?

"Not simply on account of the rolling movement." This seems to suggest that the rolling movement automatically corrects itself. I have heard the notion before. The idea is that if the machine, imagined to be coming towards one, rolls clockwise, then the right wing has a greater angle of incidence to the relative wind than the left wing, and hence the increased lift on the former side tends to correct the machine. This is all bosh. The aeroplane rolls, in the first instance, because, from one cause or another, it loses lift on the right side. Loss of lift cannot be same thing as increase of lift. You might as well say that by losing a fiver you have earned a fiver.

"Afraes states that if a dihedral-angled machine rolls over on one side 'the force due to the reaction of the deflected air will obviously be the same on each side.'"

Afraes most certainly says this, and would not deserve to be "Afraes" if he said anything else. The direction in which the air is deflected is perfectly immaterial. The reaction is a function of the area of the wings (the same on either side) the angle of incidence between the wing and its flight path (the same on either side), the speed (the same on either side), and the atmospheric density (the same on either side). Therefore, the reaction on each wing is equal.

I have taken the liberty of taking this point of the letter out of its proper order so as to put it next to this one: "The incidence of the wing OX would then be nil, and that of OY is, if anything, increased as the machine fell."

This is partly rot and partly a garbled edition of my own words. The incidence of each wing remains exactly the same as before so far as the component of forward motion is concerned. So long as the machine goes forward at all the incidence of the wing OX will never be nil.

But what are these delicious four words. "As the machine fell." Verily the enemy hath delivered himself into my hands. For why should the machine fall? Isn't the falling of the machine the sideslip to which I referred? And how on earth could the recovering reaction occur without this "falling of the machine?"

I should jolly well think this *was* "the chief factor in the automatic stability of a dihedral-angled aeroplane," but that it is "much more important than the righting moment due to sideslip" I most stoutly deny, seeing that it IS the righting moment due to sideslip.

It is surely unnecessary for me to inform this gallant brass-hat that when an aeroplane falls sideways, even when falling vertically, it is "side-slipping." But I never expected that my humble articles would have their utility shown up by clumsy mental processes of a two-and-a-half striper.

I shall have to put my price up!

But to return for one moment to the idea of the rolling action in itself setting up a restoring couple. Another correspondent, who is not worth quoting *in extenso*, says: "I think there is something in the argument that if a machine rolls over the mere act of rolling does give extra lift to the lower wings apart from any sideslip."

By way of putting another nail or two in the coffin of this fallacy let me suggest that if this were true of a dihedrally-angled aeroplane it would be equally true of one with perfectly straight planes, and likewise true of one with "cathedral" planes. But it isn't true of any aeroplane.

It reminds me of the dear old cyclist who always put his brake on a little when climbing a hill in order to counteract the tendency of the machine to run backwards. The theory may be broadly defined thus:—A certain cause gives rise to an effect which is itself the cause of an opposite effect. Lewis Carroll never compressed so much nonsense in so small a space.

Finally let me deal in first principles. A roll is caused by loss of lift on one wing. This involves loss of lift in the machine as a whole. Loss of lift (supposing the speed remains constant) involves loss in height. Therefore the recovery from the roll can only be obtained from the falling of the aeroplane. This falling is called sideslip. Therefore it is the sideslip which promotes lateral stability.

THE JOYSTICK.

The September number of the "Joy Stick," the official house organ of A. V. Roe & Co., Ltd., contains several articles and accounts of sports, and the usual other items of news. Included among the articles is an interesting résumé of the work which A. V. Roe & Co., Ltd., have done for the improvement and betterment of their young employees.

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THE PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by The Aeroplane from the current Official Patents Records.

Patent Applications.

Burr, G. Anti-equilibrium aeroplane indicator. No. 14985. Sept. 14th.
Burton, T. Spar. No. 14670. Sept. 10th.
Crawford, A. E. Vessels for air navigation. No. 14736. Sept. 11th.
Fittes, R. Level indicators for aircraft. No. 15003. Sept. 14th.
Frassinetti, R. Aeroplanes. No. 14651. Sept. 9th.
Frei, J. Raschle-. Propeller for ships, airships, flying machines, etc. No. 14794, Sept. 11th.
Fullerton, S. Aeroplanes. No. 14891. Sept. 12th.
Lake, C. J. Aeroplanes. No. 14622. Sept. 9th.
Marshall, R. Control of aircraft. No. 14638. Sept. 9th.
Mayrow, J. J. Aeronautical machines. No. 14850. Sept. 12th.
Moston, J. Aircraft. No. 14675. Sept. 10th.
Munroe, H. Aerial vehicle obstructions. No. 14652. Sept. 9th.
Palmer, E. T. Portable hangar or shed for housing aeroplanes, etc. No. 14989. Sept. 14th.
Reddaway, F. Means for extinguishing burning petrol tanks of aeroplanes. No. 14814. Sept. 12th.
Rowbotham, C. A. Aeroplanes. No. 14588. Sept. 9th.
Shaw, W. R. D. Motor-boats and marine aircraft. No. 14878. Sept. 13th.
Shaw, W. R. D. Construction of aircraft and boats No. 14954. Sept. 13th.
Thomas, J. M. Engine control for aircraft. No. 14988. Sept. 14th.
Tolputt, H. Aircraft. No. 14674. Sept. 10th.
Watts, H. C. Construction of laminated wood airscrews. No. 14632. Sept. 9th.
Winnperis, H. E. Instrument for aerial navigation and bomb-dropping. No. 14964. Sept. 14th.
Wylie, H. N. Metal struts for aircraft. No. 14631. Sept. 9th.

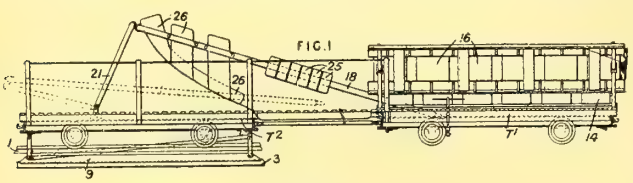
Complete Specifications Accepted, Prints of which can be obtained on and after Oct. 3rd, 1918.

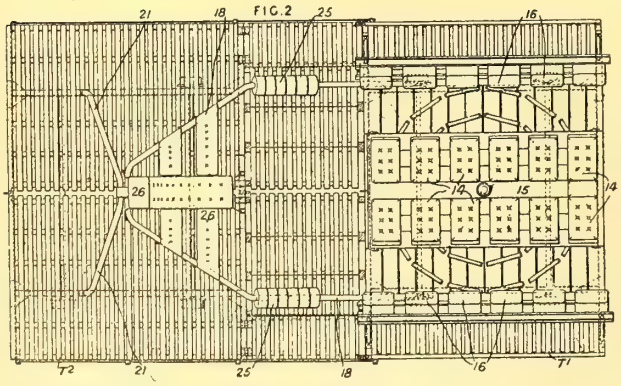
118,655. Aug. 2nd, 1917. Knudsen, H. Methods of joining wires to turn-buckles and similar fittings.
118,659. Aug. 28th, 1917. Downing, A. E. Propulsion of aeroplanes.
118,683. Sept. 8th, 1917. Cleaver, H. C. Propellers for aircraft.
118,693. Sept. 17th, 1917. Feure, G. de, and Embiricos, A. A. Aeroplanes.
118,714. Oct. 6th, 1917. Ayling, G. J., and Ayling, G. Construction of girders, spars, struts, and the like for aeronautical machines.
118,739. Nov. 9th, 1917. Hall, J. I., and Callender's Cable and Construction Co. Aerodrome lighting for the landing of aircraft.
118,785. Jan. 29th, 1918. Taylor, W. Levels and inclinometers for aircraft.

Abridgments of recently published Specifications.

117,309. Aeronautics. Thompson, N. A., Aeronautic Works, Middleton, Bognor, Sussex.

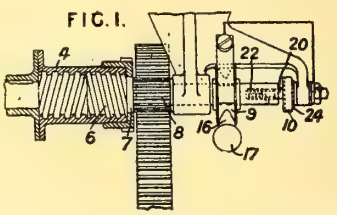
Platforms, Docks, and Launching-ways.—A device for launching seaplanes from the shore into the water comprises a trolly T^1 provided at the bottom with pads 14 and at the sides with pads 16 for receiving the seaplane, and mounted to run on rails 1 carried on piles and projecting into the water. When used for landing seaplanes from the water, the trolley T^1 is connected to an auxiliary trolley T^2 carrying a landing-cradle 18, 21 fitted with pads 25, 26. The trollies are held down to a central rail 3 by angle-bars 9. The pads 14 may be carried on a turntable 15. The pads may consist of canvas or other material connected by a cable to hauling-mechanism.





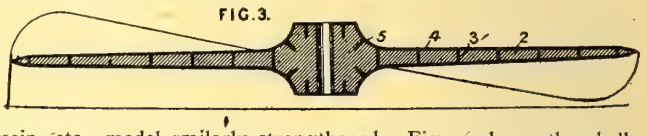
116,834. Engine turning-gear. Green, G., Pelham, Villa, Strawberry Vale, Middlesex, and May, F., Thames Bank, Grove Park, Chiswick.

In turning-gear for aircraft engines, etc., in which the starting-pinion 8 is brought into gear with the engine shaft by means of a quick-pitch screw 6 and nut 4, a brake in the form of a metallic block 16 operated by a hand-lever 17 completes the circuit of the starting motor, and the circuit is maintained by a contact 10 on the end of the pinion shaft 7 until the shaft is retracted by the starting of the engine. The brake 16 engages a V-section pulley 9 keyed to the pinion shaft by balls engaging in keyways in the shaft, and ensures the axial movement of the pinion 8 into gear when the motor is started. The end contact 10 is a cup-shaped member with a spigot 20 fitting in the recessed end of the shaft 7 and pushed out by a spring 22. It engages a fixed insulated contact 24 connected to the hand-lever.



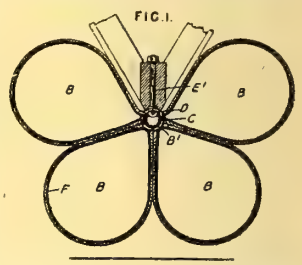
117,202. Screw propellers. Howarth, F. W., 10, New Court, Lincoln's Inn, London. (Mott, S. D.; 130, Autumn Street, Passaic, New Jersey, U.S.A.)

In propellers for aircraft, a metallic shell is deposited electrolytically on a wooden core re-inforced with studs 3 or on a wax, resin, etc., model smilarly strengthened. Fig. 3 shows the shell 4 deposited on a wooden core 2 having the transverse studs 3. Additional studs or screws 5 are fitted to the boss.



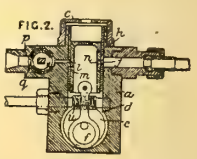
117,119. Aeronautics. Sloper, T., Southgate, Devizes, Wiltshire.

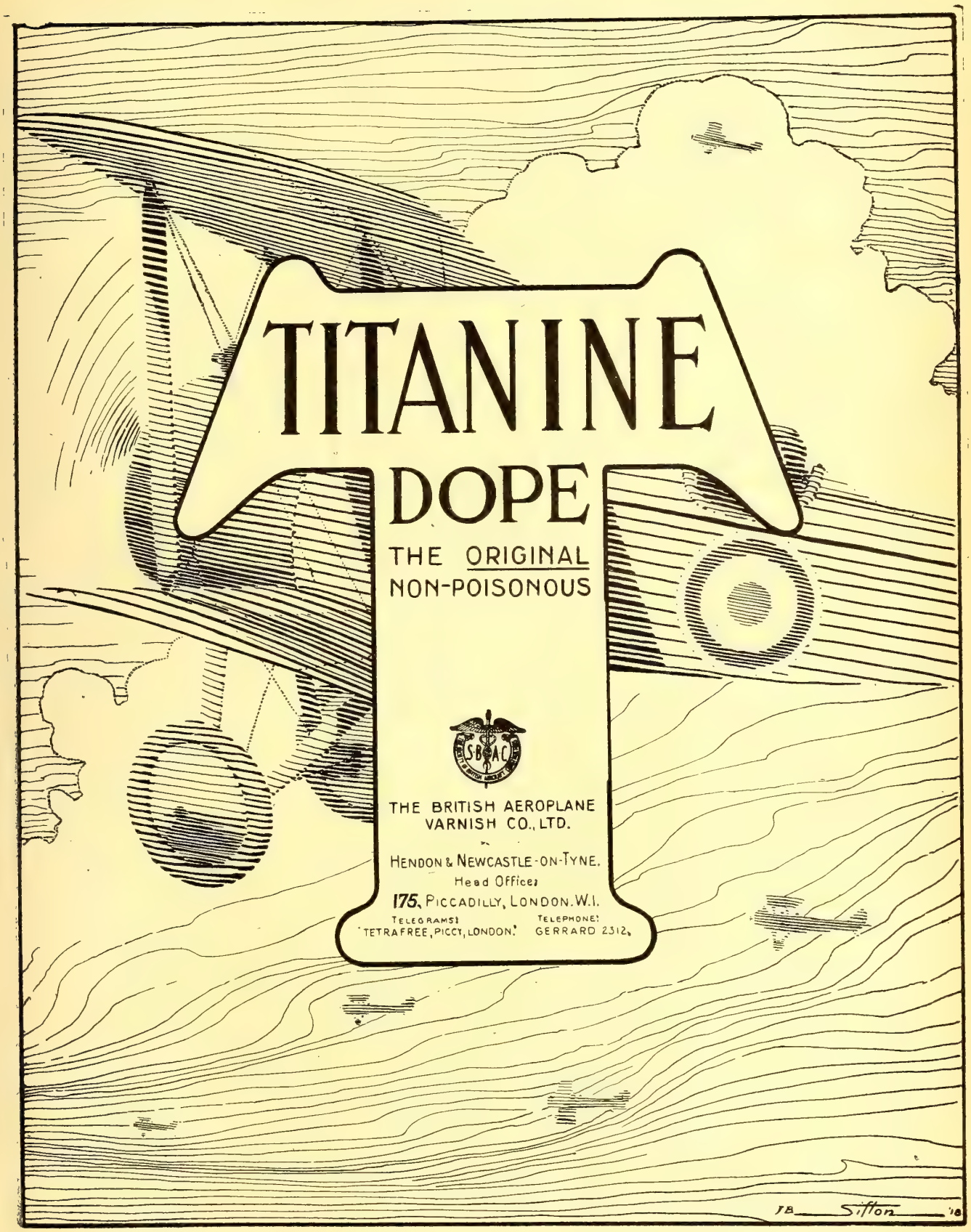
Shock of landing deadening.—A cushioning-device for aircraft comprises a number of flexible elongated pneumatic chambers placed side by side and secured along longitudinal lines near to each other so that the chambers are crowded together and against the part to be cushioned. Fig. 1 shows in cross-section a cushioning-device comprising four chambers B of rubbered canvas having wired edges B^1 with eyelet holes through which a helix C is wound. The helix is secured to the keel of a gondola by a wire D passed through eye-bolts E^1, or the helix may be itself threaded through the eyes in the bolts. The chambers B may be airtight or provided with separate inner tubes F, and are preferably of streamline form. Should one chamber collapse the remaining chambers expand laterally and remain operative.



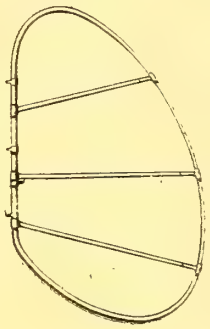
117,201. Reciprocating pumps. Dowler, S. C., 51, Warwick Road, Sparkhill, Birmingham.

An oil pump for an internal-combustion engine comprises a barrel *a* closed at the end by a cap *c* and provided with diametrically-opposite inlet and outlet openings *i*, *j*, with which openings *m*, *n* in the hollow piston *h* are adapted to register during the suction and delivery strokes respectively. During the upstroke a partial vacuum is formed inside the piston and gear-chamber *d*, and oil enters through the ports *i* *m*. After a number of strokes the piston and chamber are nearly filled and enclose an air cushion at the top of the piston. During the downstroke, this air is compressed and forces the oil through the ports *n*, *j*. The inlet may be controlled by a throttling slide valve *q*, which is adapted to vary the size of the ports *p*, and may be actuated by the throttle of the engine. The piston *h* is actuated by worm gearing *a*, *e*, and an eccentric *f*.




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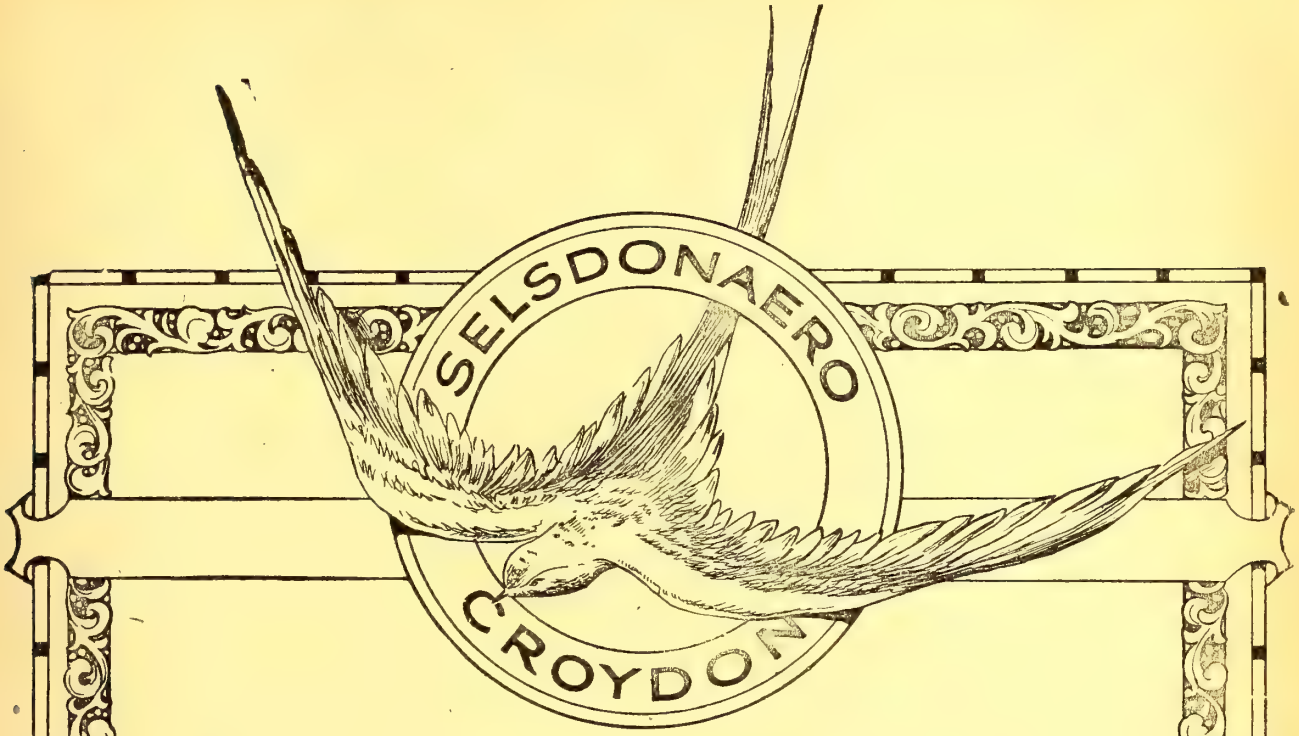
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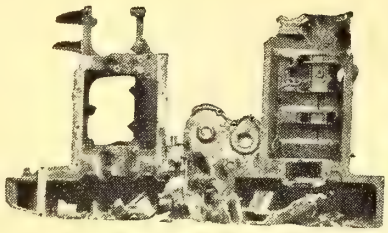
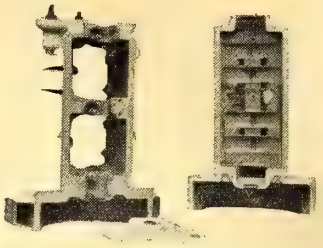


Photo on the left of Base Chamber and Upper Part of Aluminium Crank-case broken into about 50 pieces and sent to Barimar for repair.

Photo on the right of Aluminium Crank-case after repair by the Barimar Scientific process of Welding Aluminium, In spite of the many parts welded into this breakage, the repaired parts could not be seen after the job was machined and cleaned up.



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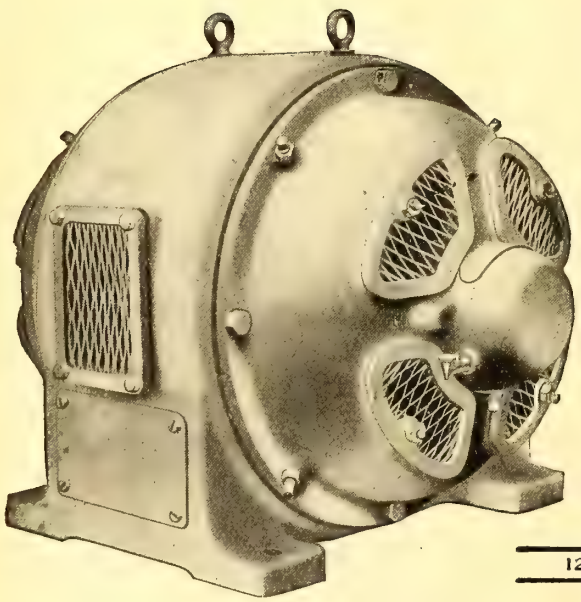
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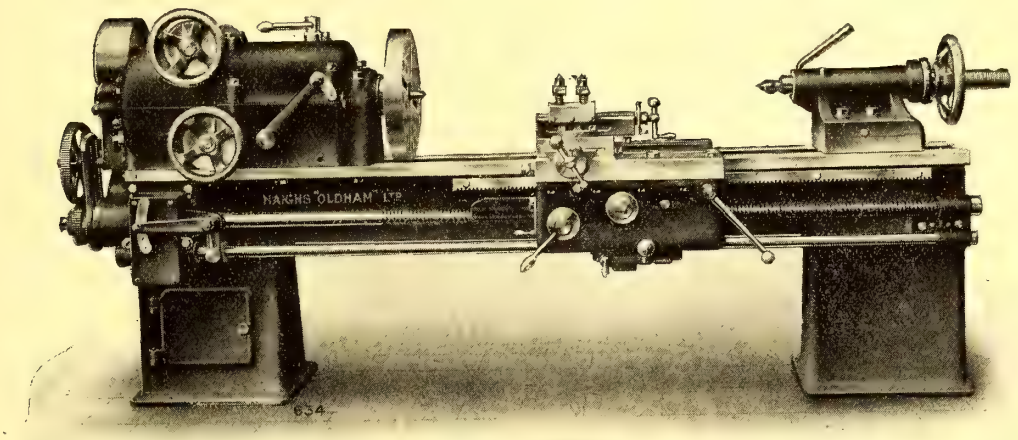
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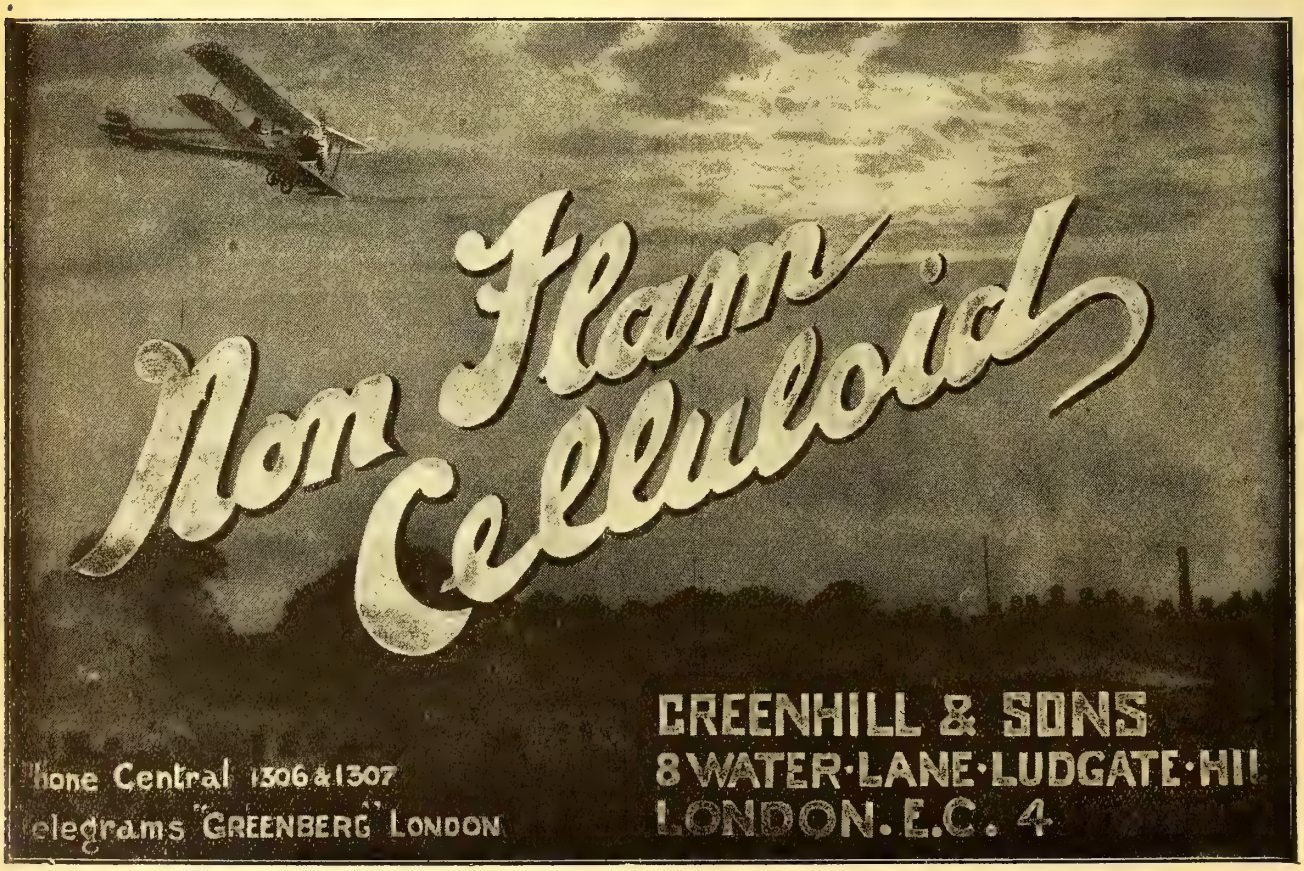
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Aeroplane Manufacturers—

Aircraft Manufacturing Co., Ltd., Hendon. 'Airmanship, Hyde, London." Kingsbury 220.
Armstrong, Sir W., Whitworth & Co., Ltd., Newcastle - on - Tyne "Armstrong Aviation, Newcastle-on-Tyne." Gosforth 500.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich" Norwich 851.
British & Colonial Aeroplane Co., Ltd. (The Bristol Co.), Filton, Bristol. "Aviation, Bristol." Bristol 3006.
British Caudron Co., Ltd., Broadway, Cricklewood, N.W.2. "Caudroplan, Crickle, London." Hampstead 5551.
Central Aircraft Co., High Road, Kilburn, N.W.6. "Aviduction, Phone, London." Hampstead 4403 and 4424.
Davidson Aviation Co., Ltd., Hammersmith, W.6. Hammersmith 1992 (3 lines).
Dawson, John, & Co., Ltd., Newcastle-on-Tyne. "Dependable, Newcastle-on-Tyne." Central 2604 (2 lines).
Eastbourne Aviation Co., Ltd., Eastbourne. "Aircraft, Eastbourne." Eastbourne 1176.
Glendower Aircraft Co., Ltd. 54, Sussex Place, South Kensington, S.W.7. "Glenacelle, Southkens, London." Kensington 7605 (3 lines).
Grahame-White Aviation Co., Ltd., London Aerodrome, Hendon. "Volplane, Hyde, London" Kingsbury 120.
Handley Page, Ltd., 110, Cricklewood Lane, N.W.2. "Hydrophid, Crickle, London." Hampstead 7420
Hooper & Co., Ltd., 54, St. James St., Piccadilly, London, S.W. "Sociable, St. James, London." Regent 912.
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).
Martinsyde Ltd., Brooklands, Byfleet, "Martinsyde, Weybridge." Woking 331; Byfleet 171.
National Aircraft Manufacturing Co., Ltd., 15, Drummond Crescent, Seymour Street, Euston. Museum 3373.
"Nieuport" & General Aircraft Co., Cricklewood, London, N.W.2. "Nieuscout, Crickle, London." Willesden 2455.
The Regent Carriage Co., Ltd., 126/132, New King's Road, Fulham, S.W.6. "Carbodis, London." Putney 2240-2241.
Roe, A. V., & Co., Ltd., Manchester. "Triplane, Manchester" City 8530-8531, Manchester.
Saunders, S. E., Ltd., East Cowes, I.O.W. "Consuta, East Cowes." Cowes 193.
Short Bros, Rochester, Eastchurch and Whitehall House, S.W. "Tested, Phone, London." Regent 378.
Sopwith Aviation Co., Ltd., Kingston-on-Thames. "Sopwith, Kingston" Kingston 1988 (8 lines).
Standard Aircraft Manufacturing Co., 28, Bow Common Lane, E. East 2823.
Tarrant, W. G., Byfleet, Surrey. "Tarrant, Byfleet." Byfleet 1, 2 & 3.
Thames Aviation Works, 141, Curtain Rd., E.C.2. London Wall 9766.
Vickers, Ltd., Imperial Court, Basil Street, Knightsbridge. S.W.3 "Vickerfyta, Knights, London." Kensington 6810.
Waring & Gillow, Ltd., Hammersmith. "Warisen, Ox, London." Museum 5000.
Westland Aircraft, Yeovil. "Aircraft, Yeovil." Yeovil 129.
White, J. Samuel, & Co., Ltd., East Cowes. "White, East Cowes." Cowes 3.
Whitehead Aircraft (1917), Ltd., Richmond, Surrey. "Whitecraft, Richmond, Surrey." Richmond 1780-1.
Witton & Witton, 143, Fonthill Road, Finsbury Park, London, N.4. North 2110.
Wycombe Aircraft Constructors, Ltd., High Wycombe, Bucks. "Aircraft, High Wycombe." High Wycombe 84.

Airships—

Airships, Ltd., High Street, Merton. Wimbledon 1314.
Short Bros., Rochester, Eastchurch, and Whitehall House, S.W. "Tested, 'Phone, London" Regent 378.
C. G. Spencer and Sons, Ltd. (See under "Balloons").

Aluminium Castings (Sand and Die)

Coan, R. W., 219, Goswell Road, London, E.C.1. "Krankases, Isling, London." City 3846.

Balloons—

C. G. Spencer and Sons, Ltd., 56A, Highbury Grove, N.5. "Aeronaut, London." Dalston 1893.

Bent Timber Parts—

Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496.
Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough" Market Harborough 13.
The Atlas Bedstead Company, Bilston. "Atlas, Bilston." Phone No. 8 and 51.

Bearings (Etonia Cast Phosphor Bronze)

Yorkshire Engineering Supplies, Ltd., Wortley, Leeds. "Yes, Leeds." Central 3927.

Blowpipes (Oxy-Acetylene)—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic. 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Vic. 3540 (3 lines).

Books (Aero Engines).

Dykes' Auto Encyclopedia, Gillam Dome Buildings, Richmond, Surrey

Buildings—

Boulton & Paul, Ltd., Rose Lane, Norwich "Aviation, Norwich." Norwich 851.
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.
Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey. Wimbledon 1313.
Rubery, Owen, & Co, Darlaston, South Staffs.

Cable Coverings and Cable Controls—

The Bowden Brake Co., Ltd., Tyseley, Birmingham. "Bowden, Acock's Green." Acock's Green 103 & 104.
Herbert Terry & Sons, Ltd., Redditch "Springs, Redditch." Redditch 61.

Carburettors—

Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2. Victoria 4670.

Casein—

Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C 3. "Suricodon, Fen, London." Avenue 34 and 35

Celluloid (Non-Flam.)—

Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London." Central 1306-7.

Clothing—

Burberrys, Haymarket, S.W.1. Regent 2165.
Dunhill's, Ltd, Euston Road, N.W.1. "Dunsend, London." North 3405-6

Component Parts—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (4 lines).
Central Aircraft Co., High Road, Kilburn, N.W.6. "Aviduction, Phone, London." Hampstead 4403 & 4404.
P.D.V. Aircraft Co., Ltd., Princes Street, Richmond. "Acros, Richmond" Richmond 1681.
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros., Bilston." Bilston 10.

Cords, Tapes, and Threads—

MacLennan, J., & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Dopes—

British Aeroplane Varnish Co., Ltd., 166, Piccadilly, W.1. "Tetrafree, Piccy, London." Gerrard 2312.
British Cellulose Co., 8, Waterloo Place, S.W.1. "Cellutate, London." Regent 4046.
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London" Gerrard 280.
Cellon, Ltd., 22, Cork Street, London, W.1. "Ajawb, Reg, London." Gerrard 440.

Engines and Parts—

Allen, W. H., & Co., Ltd., Bedford. "Pump, Bedford." Bedford No. 1.
Arrol-Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Beardmore Aero Eng, Ltd., 112, Great Portland Street, W.1. "Beardmore, London." Gerrard 238.
Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W.1. "Aeroflight, Vic, London." Vic. 7026.
Gordon Watney & Co., Ltd., Weybridge. "Mercédès, Weybridge" Weybridge 550 (7 lines).

Engines and Parts (continued)—

Green Engine Co., Ltd., Twickenham. Richmond 1203.
Gwynnes, Ltd., Hammersmith, W. "Gwynne, Hammersmith." Hammersmith 1910.
Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London" Gerrard 8926.
Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1654-5-6.
Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton." Wolverhampton 985.
The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1. "Elevenfold, London." Walthamstow 811 (2 lines).
Walton Motors, Ltd., Walton-on-Thames. "Motors, Walton-on-Thames." Walton-on-Thames 220.

Electrical Accessories—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Eusroad, London." Museum 70.
Premier Electric Heaters, Ltd., 258, 259, and 360, Bradford Street, Birmingham. "Fahrenheit, Birmingham." Midland 981.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Electric Cables—

E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 242.
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2207; London Wall 1564.

Electric Lighting and Power—

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Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Eusroad." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—

W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines).

Flare Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flexible Shafts—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Fluxes—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools—

Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton." Bournemouth 1160.

Furniture (Office)—

Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2. London Wall 573 and 6179.

Galvanising—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

Gauges—

J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17.

Gears—

Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham. "Mosgear, Birmingham." East 407.

Glue—

Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Bececolin, Cannon, London." City 1206.
Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Phone, London" Avenue 4611-2.
Mendine Co., 8, Arthur Street, E.C. Bank 5873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3.

Goggles—

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Hack Saw Blades and Machines—

Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880.

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Heating and Ventilating—
Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 372 (2 lines).
Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).
The Thames Bank (Blackfriars) Iron Co., Ltd., Upper Ground Street, London, S.E.1. "Hot Water, Friars, London." Hop 763.

Hollow Spars—
McGruer Rentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718.

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1308.

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17. "Aneroid, Phone, London." Walthamstow 180.

Leather for Aeroplanes—
George Angus and Co., Ltd. Newcastle-on-Tyne. City 72. Central 956-7. Quayside City 73.

Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London. "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1. "Vicksmag, Phone, London" Museum 430.
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry. 'Corlton, Coventry." Coventry 1008-1009.

Metal Casement Manufacturers—
Henry Hope and Sons, Ltd., 55, Lionel Street, Birmingham. "Conservatory, Birmingham." Central 999 (2 lines).

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham. "Clifford, Birmingham." Central 42-43. Avenue 1432.

Metals in General—
Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London." City 6342.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4959.
Aircraft Supplies Co., Ltd., Ascol House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton 1041.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Lombard Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Eusroad, London." Museum 70.
Mountford, Fredk., Lt., Lifford, Birmingham. "Fremo, Birmingham." King's Norton 261.
Rubery Owen & Co., Darlaston, South Staffs.
Sankey, Joseph, & Sons, Ltd, Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Metal Parts and Fittings (continued)
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston" Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford." Keynsham 21.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.
Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham." Central 793.
MacLennan, J., & Co., 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines).

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2. "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London." London Wall 3266-3267.
C. G. Spencer and Sons, Ltd. (See under "Balloons").

Piston Rings—
British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.
Allen & Simmonds, Ltd., Reading.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." 24214 Leeds.
The Pegasus Aircraft Co., Ltd., Totterdown Street, Tooting, S.W.17. Streatham 1242.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil. Yeovil 129.

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 166

Rubber Tubing & Accessories—
Hancock, James Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Masticator, Isling, London." City 3811 and 3812.

Safety Belts—
C. H. Holmes and Son, 38, Albert Street, Manchester. "Semloh, Manchester." City 4432.

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Invertors, Redditch." Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Southampton 1337.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds. Leeds 21953.

Searchlights & Landing Lights—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London."

Shackles— Willesden 2480.
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London" Vic 4830.
British Metal (Kingston), Ltd., Kingston-on-Thames. [Staffs.
Rubery Owen & Co., Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Sparking Plugs—
Lodge Sparking Plug Co., Ltd, Rugby. "Igniter, Rugby." Rugby 235.
Ripault, Leo. & Co., Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

Springs—
Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Steel—
Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 to 3237.
Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Steel Stamps and Markings—
John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines)

Taper Pins—
Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—
MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

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The Aeroplane

Acetylene Welding Plant—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone. London" 3540 Victoria (3 lines)

Aeroplane Manufacturers—

Aircraft Manufacturing Co, Ltd, Hendon "Airmanship, Hyde, London" Kingsbury 220
Armstrong, Sir W., Whitworth & Co., Ltd., Newcastle - on - Tyne "Armstrong Aviation, Newcastle-on-Tyne." Gosforth 500.
Blackburn Aeroplane & Motor Co, Ltd., Olympia, Leeds "Propellors, Leeds" Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich" Norwich 851
British & Colonial Aeroplane Co., Ltd. (The Bristol Co.), Filton, Bristol "Aviation, Bristol" Bristol 3066
British Caudron Co., Ltd., Broadway, Cricklewood, N.W.2. "Caudroplan, Crickle, London." Hampstead 5551
Central Aircraft Co., High Road, Kilburn, N.W.6 "Aviduction, Phone, London" Hampstead 4403 and 4424.
Davidson Aviation Co, Ltd, Hammersmith, W.6 Hammersmith 1992 (3 lines).
Dawson, John, & Co., Ltd, Newcastle-on-Tyne "Dependable, Newcastle-on-Tyne" Central 2604 (2 lines)
Eastbourne Aviation Co., Ltd., Eastbourne "Aircraft, Eastbourne" Eastbourne 1176
Glendower Aircraft Co, Ltd. 54, Sussex Place, South Kensington, S.W.7 "Glenacelle, Southkens, London." Kensington 7005 (3 lines).
Grahame-White Aviation Co., Ltd., London Aerodrome, Hendon. "Volplane, Hyde, London" Kingsbury 120
Handley Page, Ltd, 110, Cricklewood Lane, N.W.2 "Hydrophid, Crickle, London" Hampstead 7420
Hooper & Co., Ltd., 54, St. James St., Piccadilly, London, S.W. "Sociable, St. James, London" Regent 912
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).
Martinsyde Ltd., Brooklands, Byfleet, "Martinsyde, Weybridge" Woking 331; Byfleet 171.
National Aircraft Manufacturing Co, Ltd., 15, Drummond Crescent, Seymour Street, Euston. Museum 3373.
"Nieuport" & General Aircraft Co., Cricklewood, London, N.W.2. "Nieuscout, Crickle, London." Willesden 2455
The Regent Carriage Co., Ltd, 126/132, New King's Road, Fulham, S.W.6 "Carbodis, London." Putney 2240-2241
Roe, A. V., & Co., Ltd., Manchester "Triplane, Manchester" City 8530-8531, Manchester
Saunders, S. E., Ltd., East Cowes, I.O.W. "Consuta, East Cowes" Cowes 103
Short Bros., Rochester, Eastchurch and Whitehall House, S.W. "Tested, Phone, London." Regent 378
Sopwith Aviation Co, Ltd, Kingston-on-Thames "Sopwith, Kingston" Kingston 1088 (8 lines)
Standard Aircraft Manufacturing Co., 28, Bow Common Lane, E. East 2823.
Tarrant, W. G., Byfleet, Surrey. "Tarrant, Byfleet." Byfleet 1, 2 & 3.
Thames Aviation Works, 141, Curtain Rd., E.C.2. London Wall 9766.
Vickers, Ltd., Imperial Court, Basil Street, Knightsbridge S.W.3 "Vickerfyta, Knights, London" Kensington 6810
Waring & Gillow, Ltd., Hammersmith. "Warisen, Ox, London." Museum 5000
Westland Aircraft, Yeovil. "Aircraft, Yeovil" Yeovil 129
White, J. Samuel, & Co., Ltd., East Cowes. "White, East Cowes." Cowes 3.
Whitehead Aircraft (1917), Ltd., Richmond, Surrey. "Whitecraft, Richmond, Surrey." Richmond 1780-1.
Witton & Witton, 143, Fonthill Road, Finsbury Park, London, N.4 North 2110
Wycombe Aircraft Constructors, Ltd, High Wycombe, Bucks. "Aircraft, High Wycombe." High Wycombe 84

Airships—

Airships, Ltd., High Street, Merton. Wimbledon 1314.
Short Bros, Rochester, Eastchurch, and Whitehall House, S.W. "Tested, 'Phone, London" Regent 378.
C. G. Spencer and Sons, Ltd. (See under "Balloons")

Aluminium Castings (Sand and Die)

Coan, R. W., 219, Goswell Road, London, E.C.1 "Krankases, Isling, London" City 3846

Balloons—

C. G. Spencer and Sons, Ltd, 50A, Highbury Grove, N.5 "Aeronaut, London" Dalston 1893.

Bent Timber Parts—

Hopton & Sons, George Street, Euston Square, London, N.W.1 "Hoptons, Eusquare, London" Museum 496
Also at Market Harborough, Leicestershire "Hoptons, Market Harborough" Market Harborough 13.
The Atlas Bedstead Company, Bilston "Atlas, Bilston" Phone No. 8 and 51

Bearings (Etonia Cast Phosphor Bronze)

Yorkshire Engineering Supplies, Ltd, Wortley, Leeds "Yes, Leeds" Central 3927.

Blowpipes (Oxy-Acetylene)—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1 "Flamma, Vic, London" Vic 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London" Vic. 3540 (3 lines).

Books (Aero Engines).

Dykes' Auto Encyclopedia, Gillam Dome Buildings, Richmond, Surrey

Buildings—

Boulton & Paul, Ltd., Rose Lane, Norwich "Aviation, Norwich." Norwich 851.
The Camden Construction Co., Ltd, 289, High Street, Camden Town, N.W.1.
Palmer, T. W., & Co, Church Road, Merton Abbey, Surrey Wimbledon 1313
Rubery, Owen, & Co, Darlaston, South Staffs.

Cable Coverings and Cable Controls—

The Bowden Brake Co., Ltd., Tyseley, Birmingham "Bowden, Acock's Green." Acock's Green 103 & 104.
Herbert Terry & Sons, Ltd, Redditch "Springs, Redditch." Redditch 61.

Carburettors—

Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2. Victoria 4670

Casein—

Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C. 3. "Suricodon, Fen, London." Avenue 34 and 35

Celluloid (Non-Flam.)—

Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London." Central 1306-7.

Clothing—

Burberrys, Haymarket, S.W.1. Regent 2165.
Dunhill's, Ltd, Euston Road, N.W.1. "Dunsend, London." North 3405-6

Component Parts—

Accles & Pollock, Ltd., Oldbury, Birmingham "Accles, Oldbury" Oldbury 111 (4 lines).
Central Aircraft Co., High Road, Kilburn, N.W.6 "Aviduction, Phone, London." Hampstead 4403 & 4404.
P.D.V Aircraft Co., Ltd., Princes Street, Richmond. "Acros, Richmond" Richmond 1681.
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros., Bilston." Bilston 10.

Cords, Tapes, and Threads—

MacLennan, J., & Co, 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Dopes—

British Aeroplane Varnish Co., Ltd., 166, Piccadilly, W.1. "Tetrafrec, Piccy, London" Gerrard 2312.
British Cellulose Co., 8, Waterloo Place, S.W.1. "Cellutate, London." Regent 4046.
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleyprea, Piccy, London" Gerrard 280.
Cellon, Ltd., 22, Cork Street, London, W.1. "Asawb, Reg, London." Gerrard 440.

Engines and Parts—

Allen, W. H., & Co., Ltd., Bedford. "Pump, Bedford." Bedford No. 1.
Arrol-Johnston, Ltd., Dumfries. "Mocar, Dumfries" Dumfries 281-282.
Beardmore Aero Eng, Ltd, 112, Great Portland Street, W.1. "Beardmore, London" Gerrard 238.
Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W.1. "Aeroflight, Vic, London" Vic 7026
Gordon Watney & Co, Ltd, Weybridge "Mercédès, Weybridge" Weybridge 550 (7 lines).

Engines and Parts (continued)—

Green Engine Co., Ltd., Twickenham Richmond 1203
Gwynnes, Ltd., Hammersmith, W "Gwynne, Hammersmith" Hammersmith 1910
Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W "Nitrifier, London" Gerrard 8926
Rolls-Royce, Ltd., 13 and 15, Conduit Street, W.1 "Rolhead, London" Gerrard 1634-6-6
Sunbeam Motor Car Co, Ltd, Wolverhampton "Moorfield, Wolverhampton" Wolverhampton 985
The Gnôme & Le Rhône Engine Co, Ltd, 27, Buckingham Gate, S.W.1. "Elevenfold, London" Walthamstow 811 (2 lines)
Walton Motors, Ltd., Walton-on-Thames. "Motors, Walton-on-Thames" Walton-on-Thames 220.

Electrical Accessories—

Johnson & Phillips, Ltd, Charlton, London, S.E.7. "Juno, London" Central 2207; London Wall 1564
Mann, Egerton & Co, Ltd, 117, Cleveland Street, London, W.1. "Installing, Euston road, London." Museum 70.
Premier Electric Heaters, Ltd., 258, 259, and 360, Bradford Street, Birmingham. "Fahrenheit, Birmingham" Midland 981.
The Rotax Motor Accessories Co, Ltd, Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London" Willesden 2480.

Electric Cables—

E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 24X.
Johnson & Phillips, Ltd., Charlton, London. S.E.7. "Juno, London" Central 2207; London Wall 1564.

Electric Lighting and Power—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564
Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Euston road." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—

W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham" Birmingham 3622 Central (3 lines).

Flare Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flexible Shafts—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Fluxes—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools—

Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton" Bournemouth 1160

Furniture (Office)—

Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2. London Wall 573 and 6179.

Galvanising—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

Gauges—

J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17

Gears—

Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham. "Mosgear, Birmingham." East 407.

Glue—

Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Bececolin, Caunon, London." City 1206
Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Phone, London" Avenue 4611-2.
Meudine Co., 8, Arthur Street, E.C. Bank 5873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3.

Goggles—

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1140.

Hack Saw Blades and Machines—

Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London" London Wall 1880.

Buyers' Guide.



Heating and Ventilating—

Chas P. Kinnell & Co., Ltd, 65 & 65A, Southwark Street, London, S.E.1 "Kinnell, London." Hop 372 (2 lines)
Sturtevant Engineering Co, Ltd, 147, Queen Victoria Street, London, E.C.4 "Sturtevant, London" Central 7121 (6 lines).
The Thames Bank (Blackfriars) Iron Co, Ltd., Upper Ground Street, London, S.E.1. "Hot Water, Friars, London." Hop 793.

Hollow Spars—

McGruer Rentwood Hollow Spar Co, Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London" Hop 718.

Instruments—

British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1108

Instruments (Scientific, Altimeters, etc.)—

The Cambridge Scientific Instrument Co., Ltd, Cambridge "Instrument, Cambridge." Cambridge 612
Short & Mason, Ltd, Macdonald Road, Walthamstow, E.17 "Aneroid, Phone, London" Walthamstow 130

Leather for Aeroplanes—

George Angus and Co, Ltd Newcastle-on-Tyne. City 72 Central 956-7. Quayside City 73.

Leather Cloth—

New Pegamoid, Ltd, 134, Queen Victoria Street, London "Pegamoid, Cent, London" City 9704 (2 lines)

Magneto Driving Pieces—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—

The British Lighting & Ignition Co., Ltd, 204, Tottenham Court Road, W.1 "Vicksmag, Phone, London" Museum 430
The British Thomson-Houston Co., Ltd, Lower Ford Street, Coventry. "Asteroidal, Coventry" Coventry 278
The M-L Magneto Syndicate, Ltd, Coventry. "Corlton, Coventry" Coventry 1008-1009

Metal Casement Manufacturers—

Henry Hope and Sons, Ltd, 55, Lionel Street, Birmingham "Conservatory, Birmingham." Central 999 (2 lines).

Metal Manufacturers—

Clifford, Chas., & Sons, Ltd., Birmingham "Clifford, Birmingham." Central 42-43 Avenue 1432.

Metals in General—

Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London." City 6342.

Metal Parts and Fittings—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London" Holborn 4959
Aircraft Supplies Co, Ltd., Ascol House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines)
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton" Wolverhampton 1041
Blackburn Aeroplane & Motor Co, Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)
British Metal (Kingston), Ltd., Kingston-on-Thames
Lombard Rim and Tube Co, Lombard Street, Birmingham. "Lombardic, Birmingham" Midland 211 (2 lines)
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing Eusroad, London." Museum 70.
Mountford, Fredk, Lt, Lifford, Birmingham. "Fremo, Birmingham" King's Norton 261
Rubery Owen & Co., Darlaston, South Staffs
Sankey, Joseph, & Sons, Ltd, Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66
The Pulvo Engineering Co., Ltd, 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London" Holborn 410.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1 "Selsero, Phone, London" Regent 1181
The Rotax Motor Accessories Co., Ltd, Victoria Road, Willesden Junction, N.W.10 "Rodynalite, Phone, London" Willesden 2480

Metal Parts and Fittings (continued)

Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros, Bilston" Bilston 10.
Wooler Engineering Co, Ltd., Old Oak Common Lane, Willesden Junction, N.W.10

Metal Shearing Tools—

Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford" Keynsham 21.

Metric Bolts—

Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 425
Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—

Anderson, D., & Son, Ltd. (Roofs) Belfast. "Anderson, Belfast." Belfast 4033-4034-4035
Bowden Wire, Ltd, Willesden Junction, "Bowrelim, Harles, London" Willesden 2400 (3 lines)
British Metal (Kingston), Ltd, Kingston-on-Thames
Brown Bros., Ltd, Great Eastern Street, E.C.1 "Imbrowned, Bethroad, London" London Wall 6300.
Herbert Frood Co, Ltd, Chapel-en-le-Frith. "Frodobrake, Birmingham" Central 793.
MacLennan, J., & Co, 30, Newgate Street, E.C.1., and at Glasgow Tapes, Cords and Threads. City 3115.

Motor Cars—

Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries" Dumfries 281-282.
Mann, Egerton & Co., Ltd, 374/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London" Museum 70.
Standard Motor Car Co, Coventry. "Flywheel, Coventry." Coventry 530 (4 lines).

Nameplates and Labels—

British Metal (Kingston), Ltd., Kingston-on-Thames
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing"

Observation Panels—

Triplex Safety Glass Co., Ltd, 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1140.

Oils—

C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2. "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—

E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London." London Wall 3266-3267.
C. G. Spencer and Sons, Ltd. (See under "Balloons").

Piston Rings—

British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.
Allen & Simmonds, Ltd., Reading.

Presswork—

Rubery Owen & Co., Darlaston, South Staffs
Terry, Herbert & Sons, Ltd., Redditch "Springs, Redditch." Redditch 61

Propellers—

Blackburn Aeroplane & Motor Co., Ltd, Olympia, Leeds. "Propellors, Leeds" Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge" Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." 24214 Leeds.
The Pegasus Aircraft Co., Ltd., Totterdown Street, Tooting, S.W.17 Streatham 1242.
Stanley Aviation Co., 67, Kingsland Road, E.2 City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil. Yeovil 129.

Propeller Cases—

The Camden Construction Co., Ltd, 289, High Street, Camden Town, N.W.1.

Pyrometers—

The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—

Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1 "Galvradico, Wesdo, London" Mayfair 4826

Rigging for Aircraft—

Cradock, Geo., & Co., Ltd., Wakefield, England "Cradock, Wakefield." Wakefield 466

Rubber Tubing & Accessories—

Hancock, James Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Masticator, Isling, London" City 3811 and 3812.

Safety Belts—

C. H. Holmes and Son, 38, Albert Street, Manchester. "Semloh, Manchester" City 4432

Screw-driving Machines—

Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Invertors, Redditch." Redditch 74

Seaplane Manufacturers—

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines)
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627
Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Southampton 1537

Seats for Aeroplanes—

Bowser, E., 50, Park Lane, Leeds Leeds 21953.

Searchlights & Landing Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10 "Rodynalite, Phone, London" Willesden 2480.

Shackles—

British Gold Shell Ring Co., Ltd., Hounslow, Middlesex "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—

Accles & Pollock, Ltd, Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds "Propellors, Leeds." Roundhay 345
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham" Central 550
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—

The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London" Vic 4830
British Metal (Kingston), Ltd., Kingston-on-Thames [Staffs
Rubery Owen & Co, Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selsero, Phone, London." Regent 1181.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Sparking Plugs—

Lodge Sparking Plug Co., Ltd, Rugby. "Igniter, Rugby." Rugby 235
Ripault, Leo. & Co., Ltd. (Oleo Plugs), 642, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

Springs—

Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 122.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Steel—

Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Firth, Thos., & Sons, Sheffield "Firth, Sheffield" Sheffield 1230 to 3247.
Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224

Steel Stamps and Markings—

John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Daylur, 'Phone, London." East 1331 (2 lines).

Steel Tubes for Aeroplanes—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines)

Taper Pins—

Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham "Fremo, Birmingham" Kings Norton 261-262.

Tapes and Smallwares—

MacLennan, John, & Co, 30, Newgate Street, E.C.1 And at Glasgow. City 3115.

BUYERS' GUIDE cont. on next page.

"The Aeroplane" Buyers' Guide.—*continued.*

Timber—
Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526.
Hopton & Sons, George Street, Euston Square, London. N.W.1. "Hoptons, Eusquare, London." Museum 496.
Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.

Time Recorders—
Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles— Staffs.
Rubery Owen & Co., Darlaston, South Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W "Installing, Eusroad." Museum 70 (4 lines).

Tyres and Wheels—
The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent." Gerrard 1214 (5 lines).

Undercarriages—
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros. Bilston." Bilston 10.

Varnishes—
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London" Gerrard 280.
Robt. Ingham Clark and Co., Ltd., West Ham Abbey, E.15. East 955.

Varnishes (continued)—
Harland, W., & Son, Merton, London, S.W. 19. "Harland, Wimbledon 45." Wimbledon 45 and 1395.
Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—
Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95.

Washers— Avenue. 1432.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Watchmakers and Jewellers—
(Silver Models)—
Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines).

Welding and Cutting Plant—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma Vic, London." Vic 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines)

Welding Repairs—
Barimar, Ltd., 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Wind Shields—
Auster, Ltd., 133, Long Acre, W.C. "Winflector, London." Regent 5910.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Wire Gauze—
Greening, N., & Sons, Ltd., 16, Finsbury Street, London, E.C.2. "Setscrew, Finsquare, London." London Wall 1082.

Wires and Cables—
Bruntons, Musselburgh, Scotland. "Wiremill, Musselburgh." Musselburgh 28.
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466 (3 lines).

Wirework—
Terry, Herbert, & Sons Ltd., Redditch. "Springs, Redditch." Redditch 61.

Woodworking Machinery—
Robinson, Thomas, & Son, Ltd., Rochdale. "Robinson, Rochdale." Rochdale 467.
Sagar, J., & Co., Ltd., Halifax. "Sawtooth, Halifax." Halifax 136.
Wadkin & Co., Leicester. "Woodworker, Leicester." Leicester 3614.

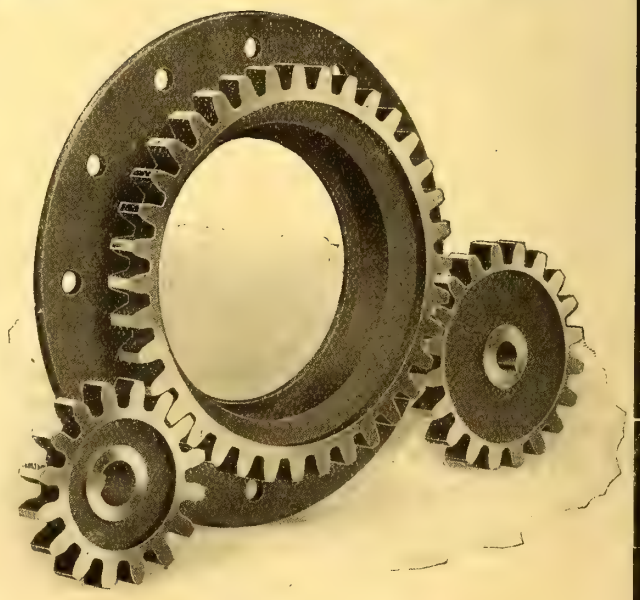
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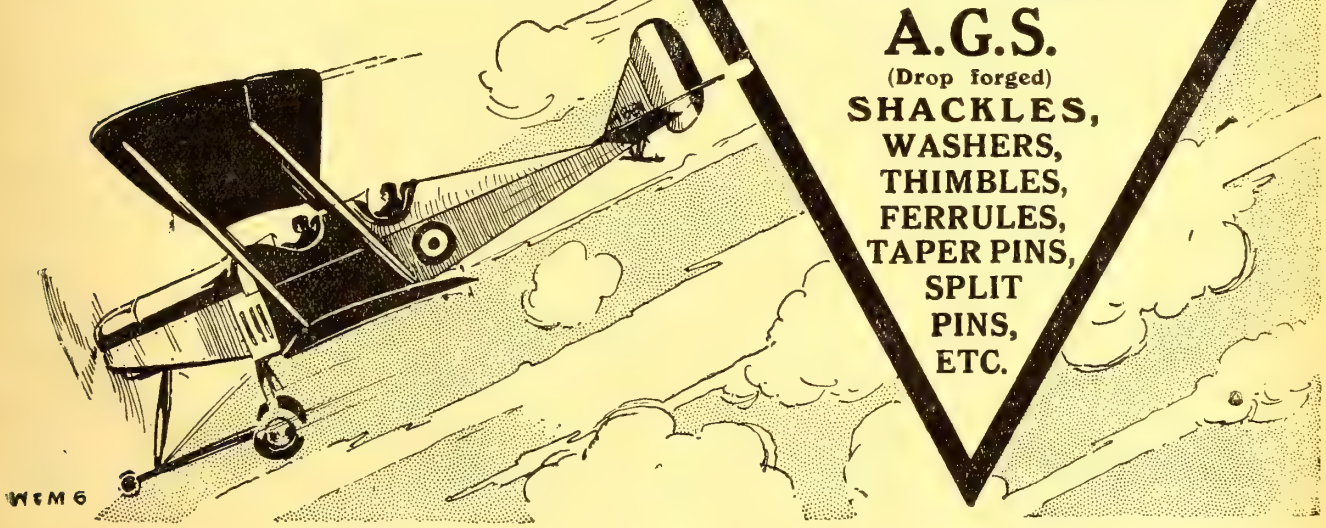
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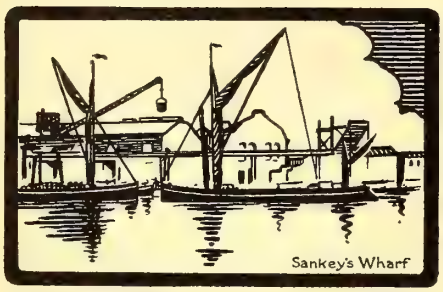
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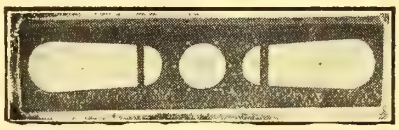
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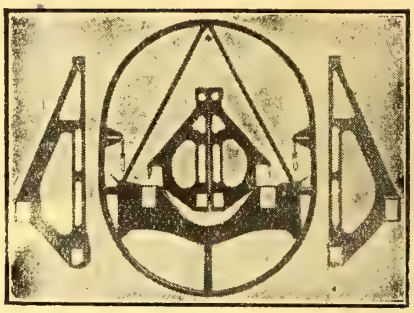
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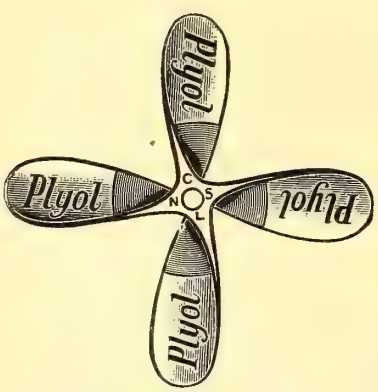
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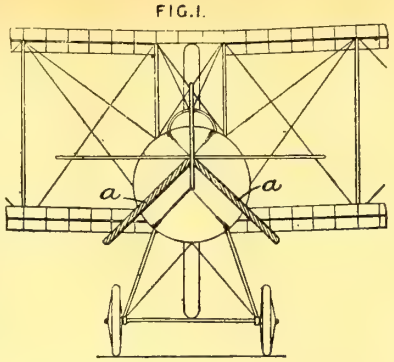
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117,411. Aeronautics. SHAW, W. R. D., Danesbury House, Chingford Road, Walthamstow, London.

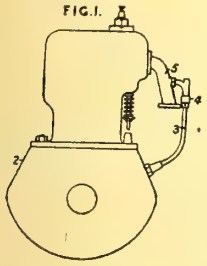
PLANES, ARRANGEMENT OF.—The tail-planes *a* of aircraft are arranged with a negative dihedral angle to prevent a spin or nose-dive due to slide-slip when banking.

FIG. 1.



117,295. Internal-combustion engines. SMIDT, K. J., 5, La Coursvej, Copenhagen

FIG. 1.

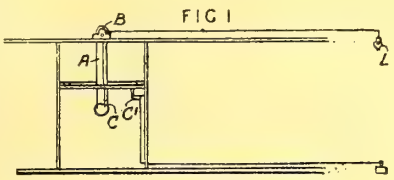


CYLINDERS.—Corrosion of the cylinder walls by acetic acid produced by the combustion is prevented by depositing a coating of oil thereon, such oil being conveyed by air from the crank case to the inlet pipe. The inlet pipe is shown at 5, the crank case at 2, and the oily air is sent through the pipe 3 having an adjustable chamber 4 for a ball valve. The chamber 4 may contain an atomizer and may be replaced by others having a different size bore, and differently weighted ball valves may be employed.

117,570. Clinometers. MCDOUGALL, W. A., 121, Elsinore Road, Forest Hill, London.

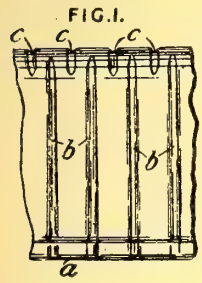
A pendulum A pivoted at B to the upper wing of an aeroplane carries an electric contact C, which completes the circuit of an electric lamp L through the contact C^1 when the inclination exceeds a certain amount.

FIG 1



117,663. Aeronautics. DICKSON, H. C., Glengarth, Quinton, Birmingham.

FIG. 1.



FRAMEWORK; PLANES, CONSTRUCTION OF.—Tubes, struts, stays, etc., the wings and other planes, and the bodies of aircraft are formed with staggered flutings transverse to their length. The flutings may be internal or external, or internal flutings may be alternated with or admixed with external flutings. Fig. 1 shows a streamline tube with internal flutings *b* on the sides and shorter flutings *c* on the front face. The tube is rolled from a sheet of metal, and one edge is bent over the other to form a flange *a*, preferably at the narrow end of the cross-section. The flutings on the inner half of the turned-over edge are reversed, so as to fit the flutings on the other edge. When the tube is formed with external flutings, they are continued through the turned-over edge, so that hollow spaces are formed in the flange. Two joints may be formed in the tube, which may have an internal web extending between the joints. Planes may be similarly formed as tubes of elongated cross-section. According to the Provisional Specification, a tail-plane so formed may have divergent portions extending from the joint to form the body of the machine.

117,653. Speed Indicators; Bomb-dropping Sights. KENT, W. G., and HUNT, N. H., 199, High Holborn, London.

Relates to means for indicating the speed of aircraft or other vessels, either to the person on board, or to an observer on the ground or on shore. The movement of a pivoted sight-bar between a fixed and an adjustable stop causes the starting and stopping of a watch, the dial of which is graduated to indicate the speed, the adjustable stop being set according to the altitude or distance. The sight-bar 3, carrying sights 1, 2, is mounted in a tube 4, which is secured to a spindle 6, on the other end of which is fixed a feeler 10. This feeler is connected by a C-spring 11 to an arm 12, adapted to be moved by a handle 13 between fixed jaws 15, 16, the spring connection causing the feeler, and therefore the sight-bar, to move through the variable distance between the fixed stop 17*a* and the altitude cam 14. The arm 12 carries a cam-ended finger 24, which, on each movement of the arm, turns a pivoted lever 25, adapted to start or stop the watch 26, the hand 27 of which rotates round the speed-graduated dial 28, Fig. 4.

The cam 14 is set by a knob 20, carrying a pinion 19, which meshes with a crown wheel 18 fast on the cam, and also with a second crown wheel 21, which is fast, with an altitude ring 22, Fig. 4,

FIG 1

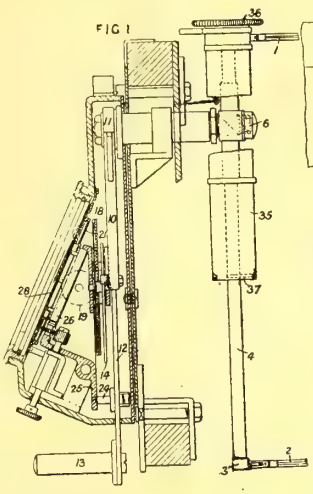
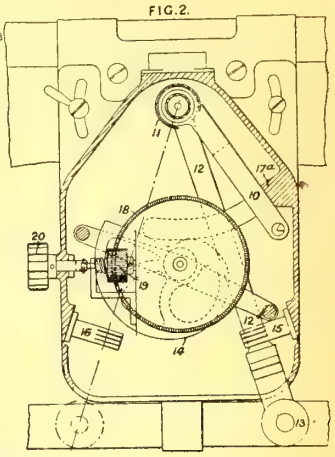
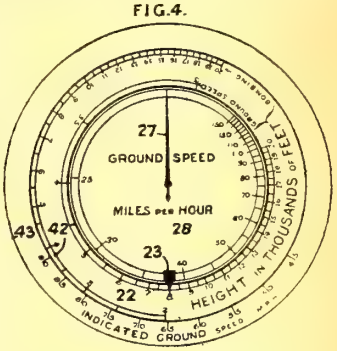


FIG. 2.



encircling the speed dial, and reading against a fixed pointer 23. The sights 1, 2, can be set, for drift correction, at right angles to the true course, by means of a sighting-tube 36, which is fitted with a graticule 37 at its lower end, and rotates in a tube 35, a pin and slot device connecting it with the sight-bar 3. The observer sets the ring 22, and thereby the cam 14, to the altitude, adjusts the sights for drift, and on sighting an object on the ground throws the sight-bar over, thus starting the watch, to the position determined by the cam 14. When the object again passes the line of sight, the handle is thrown back and stops the watch, the handle of which indicates the speed. For bomb-dropping, the ring 22 is turned by means of the knob 20 until the altitude figure on its outer scale 42 is opposite the speed figure on the fixed scale 43, thus effecting a new position of the cam 14. The lever 12 is now moved to bring the feeler 10 against the cam, thus setting the sight bar in its advance position for releasing the bomb at the instant when the target object comes into the line of sight.

FIG. 4.

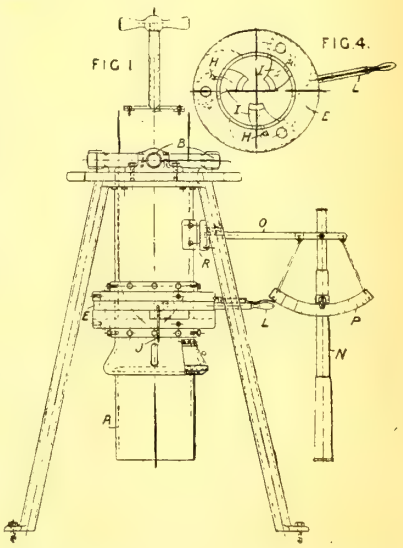


117,501. Bomb-dropping Apparatus. WELSH, J., 29, Williams Street, Hyde Road, Gorton, Manchester.

Relates to bomb-dropping apparatus of the kind described in Specification 19874/09, and consists in bomb-releasing mechanism adapted to ignite the fuse of the bomb, and in improvements in the sighting device. An open-ended tube A is mounted on gimbals B, and the bomb, after being inserted from top, is held by three pivoted detents I, Fig. 4, adapted to be released by a rotary ring E, operated by a handle L, and having studs H engaging cam slots in the detents. For igniting the time fuse of the bomb, a charge of powder is placed in an annular recess in the tube A, and is ignited, just before the completion of the releasing movement, by a pin J on the ring E striking against a percussion device. The sight comprises a telescope N pivoted to a bracket arm O, which carries a graduated sector plate P. The telescope can be laterally adjusted for windage by rotating the bracket arm O about its longitudinal axis on the bearings R.

FIG 1

FIG. 4.



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COMMERCIAL AERONAUTICS

PASSENGER SERVICES AND INSURANCE.

BY "MEDWAY."

In a recent article dealing with some aspects of the operating costs of a commercial service, passing mention was made of insurance as being one of the items to be included in an estimate. In point of fact, the position with regard to insurance is at present somewhat obscure, and in the opinion of the writer it would certainly be advisable that the Society of British Aircraft Constructors should approach the leading insurance companies, individually or collectively, with a view to clearing up the whole position and getting it defined before passenger services are actually put into operation.

It is, of course, possible nowadays for a motorist or motor operating company to take out a policy which will secure him fairly well against any risks including injury to car or passenger, or to any third person. An aerial passenger service would from the point of view of insurance be in the same position as any other common carrier. That is to say, its proprietor could not contract out of any liabilities following up the injury or death of passengers owing to accident.

Protection of Carrying Companies.

Thus, the first thing to be done is to agree with the leading insurance companies the general terms of a comprehensive policy which will protect the carrying company fully. It does not seem that, in principle, such a policy would have to differ materially from those at present existing.

The main point at issue in the first instance would be the premium payable for a given degree of protection. The tendency would doubtless be to put the premium unduly high and, to meet this, clear evidence would have to be put forward indicative of reliability and freedom from accident.

Adjustable Premiums.

There should be no inseparable difficulties as regards the terms of the carrying company's policy. Doubtless an arrangement could be made under which adjustments of the premium would follow automatically upon the results of experience as to what constituted a reasonably paying proposition to the insurance companies.

In the event of the premium at first agreed being more than sufficient, a portion could be made returnable or set off against the premiums of subsequent years. On the other hand, the carrying companies might undertake to pay increased premiums in the event of the premium originally decided upon being proved to be inadequate.

An Added Complication.

The whole subject of insurance is, however, complicated for a totally different reason. If a man travels in a motor-car or railway train and meets with an accident causing death, the companies with which he personally is insured cannot evade liability for payment to his heirs or executors.

On the other hand, if a man loses his life owing to an accident to an aeroplane in which he is travelling, the companies with which he is insured may probably plead successfully that they are not liable to pay up. In many policies of recent date there is a clause inserted to this specific effect.

Moreover, among the questions asked before a policy is taken out, is usually an inquiry as to whether the proposer intends to engage in aeronautics. As a rule the ordinary civilian answers this question in the negative. In that case the position of a company refusing payment on the grounds that the person insured had in fact engaged in aeronautics and had meet his death for that reason would be a very strong one.

The Passenger's Point of View.

Now, the average man not possessing large capital usually provides for his dependants by means of insurance. A man who has paid substantial premiums for a number of years would hesitate to run even a very slight risk of death under circumstances which would make his policies invalid and leave his dependants destitute.

Any reasonably cautious man, even if he were only considering a straightforward run from London to Paris, would feel obliged to take account of this position.

An Obvious Need.

It would appear, then, that what is wanted is some special form of policy, more or less on the lines of the ordinary insurance policy issued by a railway company to passengers for single journeys, but somewhat more comprehensive. It should be possible for the passengers by the aerial service to take out a policy for the journey for an amount equivalent to the value of the whole of the life policies held by him, the validity of which would be endangered by accident during the journey.

In the event of an accident occurring, the liability of the company issuing these short policies might be limited to the payment of the amounts of policies actually held but rendered invalid during the journey. That is to say, no passenger could then with advantage take out a policy for a larger amount than that for which he is normally insured, though if no such limitation were imposed, the position would be even more satisfactory.

Other Difficulties.

An arrangement of this kind would apparently cover the point fairly adequately though one can still conceive possibilities of difficulties arising. Supposing, for example, that a middle-aged man travelled by air from this country to America, and, either during the journey or within a few days of its conclusion, died, suddenly of heart failure, one would imagine that a company with which he had been insured heavily might plead successfully that death was due to his having made his journey and that he had specifically stated that it was not his intention to do anything of the kind. This, however, is a somewhat remote contingency which most people would, no doubt, be prepared to ignore, though possibly some definite arrangement could be made with the insurance companies generally to cover the point.

A Matter for the S.B.A.C.

Altogether, I hope that these notes, even if they may not be regarded as offering the best solutions of the difficulties likely to arise, may at least have indicated those difficulties sufficiently to encourage the S.B.A.C. to take the matter up with the insurance companies in order that, when the time comes for passenger services to be started, the support that would otherwise be accorded to them, will not be materially reduced owing to the natural caution of that large percentage of the population that makes its main provision against contingencies in the form of life insurance policies.

A MATTER FOR THE AERIAL LEAGUE.

By H. F. SMALLMAN-SMITH.

The speedy adoption of the aeroplane as a commercial vehicle immediately following the return of peace conditions has been so continuously insisted upon in the Press of late that it has become practically an article of faith with a largely increasing public.

Whilst, however, the capacities of the aeroplane considered merely from the point of view of speed and carrying capacity obtain an increasingly generous measure of recognition, very little reference is to be found to the nature and extent of the inevitable preliminary spade-work to be done before aero-carriage in any degree can enter into serious competition with other existing forms of transport. Nevertheless, for a long time the success or otherwise of the numerous air-transport undertakings which will undoubtedly spring into being must mainly turn upon the initial recognition of the nature of the task to be undertaken in this respect, and of the thoroughness with which it is carried out.

The writer has dealt in previous articles with the primary necessity of establishing a system of air-halts, based upon the industrial map both in relation to the creation of an aerial system of air transport and the conditions to be sought for the foundation of pioneer passage-carrying undertakings.

The natural sequel to the successful establishment of these halts will certainly be the foundation of freight-carrying lines of aero-carriers designed not for the comfort and convenience of passengers, but for the conveyance at a profit of those classes of merchandise in regard to which rapidity of delivery may be a primary consideration, and the value of which in relation to bulk and weight may be sufficiently high to warrant the payment of freight charges—for a time at least—on a higher scale than obtains in connection with current accepted forms of transport.

It would appear, however, to be a matter of the highest importance to pioneer exploiters of this class of business that, as a preliminary measure, ample and correct information should be at hand in regard to such classes of commodities as they may reasonably look to handle with data as to weight, bulk, price, localities of production, and measure of output. With such information at hand, it should be possible to institute calculations which would

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be invaluable to intending promoters of lines of aero-carriers in arriving at an approximately correct judgment of the prospects of any given undertaking.

Overcoming Conservatism.

Apart again both from the practicability of aero-carriage and its attractiveness as a convenience to producers there arises the difficulty always found in inducing any conservative community to accept novel and untried methods where those in use are found sufficiently satisfactory, and where the margin of advantage offered by the newer method is not so overwhelmingly great as to outweigh the doubt suggested by the fact of its being novel and commercially unproved. That this consideration alone may be sufficient indefinitely to extend the hiatus between the establishment of pioneer aero-carriage undertakings and their recognition in any wide measure by the commercial community is sufficiently obvious, and in the interests both of the Aircraft Industry generally and of the exploiters of aero-carriage, who must in future form an extremely important section of the supporters of that Industry, it would appear highly desirable, if not imperative, that steps should be taken at no distant date to secure a direct exchange of views between representatives of the Industry and producers generally, with a view to the recognition and serving of their common interests.

The undertaking of initial steps to such an end by any private firm must necessarily be a matter of considerable difficulty, and involve an expenditure of time and labour upon which no immediate return could be looked for—and which, therefore, commercially speaking, would scarcely be justified. Such steps, in fact, would be appropriate only to some public body interested both in advancing and protecting the commercial future of the industry, and in directing its activities into channels tending to the common good. And this body's interposition should invite neither suspicion nor neglect.

The Aerial League's Opportunity.

Such a body exists already in the Aerial League, and should those in control of its activities elect to enter upon a comprehensive programme with a view both to obtaining from the individual members of the commercial community data of the nature indicated above in regard to their respective branches of commerce, the digestion of such information, and its presentation in useful and convenient form for the guidance of aircraft manufacturers, its intervention could scarcely fail to answer a most useful purpose.

In the sequel it might, at least, have the effect of hindering the exploitation of the investing public through the medium of many ill-conceived and rash undertakings, whilst affording some solid foundation for the establishment of bonafide and useful public services in the new order.

AERIAL MAIL NOTES.

Italy.

Under the management of Prince di Scala, M.P., the President of the Commission on Civilian Aerial Transport Services, the arrangements for the running of the Italian section of the London-Salonika postal route are now complete.

This part of the line starting from Nice and passing along the Riviera *via* Genoa, Pisa, and so on, to Rome, and afterwards to Brindisi, will be a marine affair, and, probably, the most regular section of the route. One gleans that the Rome-Brindisi section may be a troublesome one, and that it is not likely to be carried out by seaplanes. People are asking how far parachutes are to be taken advantage of.

In future passenger-carrying enterprises, the agile may use them for landing on sprung platforms or on trapeze-performers' nets; but the problem of landing one's grandparents or the rich aunt comfortably, still requires solving, if speedy cross-country transport is not to be hung up by constant stops.—T. S Harvey.

Norway.

An aerial postal service for Norway has been undertaken as a private enterprise. A company with a minimum capital of $670,000 and a minimum of $1,340,000, guaranteed by several Christiania banks, has been formed for this purpose. It is announced that the service will probably include the transportation of passengers, besides carrying the mail for that country.

The aeroplane route is planned to lie from Christiania, Stavanger, Bergen and Trondjhem.

From Stavanger to Aberdeen, is a route which the Norwegian company is going to endeavour to establish, but at present there is no evidence that the British Government will sanction this.

It is planned to equip 28 Norwegian marine flying boats of 200 h.p., each having a carrying capacity of 1760 lbs., but one would imagine that this capacity must include the weight of pilot, passenger and fuel.

U.S.A.

The U.S. Second-Assistant Postmaster-General has prepared tables covering aerial mail operations for the month of July. The totals of these tables compare favourably with the June totals as will be seen from the undernoted summary.

	Miles flown.	Hours of flying.	Mail Carried Aeroplane	Ordinary.
July	11,720	156 hrs. 34 mins.	1,476 lbs.	15,491 lbs.
June	10,640	151 hrs. 22 mins.	990⅜ lbs.	12,090¾ lbs.

[Aeroplane Mail means presumably letters specially prepaid for transport by aeroplane, whereas Ordinary Mail means letters from the ordinary postal service sent by aeroplane to make up a full load for each journey.—Ed.]

Six mail aeroplanes, recently constructed at the Standard Aircraft plant at Elizabeth, N.J., left the flying field on August 6th, two going to Washington, two to Philadelphia, and two to Belmont Park.

The aeroplane are of 150 h.p., and the specifications call for a speed of 100 miles an hour, a climbing speed of 6,000 feet in 10 minutes, with a carrying capacity of 300 pounds of mail.

Canada.

It is probable that the aerial mail service route, started on August 16, between Ottawa and Toronto will be maintained as a regular weekly service.

The following countries have now started aerial mail systems or are preparing to do so:—

America, France, Canada, Greece, Turkey, Norway, Germany, Austria, Italy and Holland.—R.M.

[Great Britain is conspicuous by its absence. Presumably we are following the same plan as that of which Colonel Seely was so proud before the war. He then announced that we were letting other countries experiment and pay for experiments by which we should profit in due course. That policy cost us millions of pounds and hundreds of lives—even thousands when one counts in the infantry killed for lack of an adequate flying service. Yet we still refuse to learn that it pays to do our own experimenting.—Ed.]

CHRISTMAS PARCELS.

[Dispatch of Christmas Parcels over the postal limits of weight to the Expeditionary Forces (other than France and Italy) *via* the Military Forwarding Officer.]

The public are notified that the following are the latest dates on which parcels above the postal limits of weight should be dispatched to troops serving abroad (other than in France and Italy) in order to secure delivery by Christmas:—

India	Sept. 20th.
Mesopotamia	Oct. 1st.
South and East Africa	Oct. 10th.
Salonika	Nov. 1st.
Egypt	Nov. 1st.
Malta	Nov. 1st.
Gibraltar	Nov. 1st.
North Russia	Oct. 12th.

Such parcels, which must not be under 11 lbs. or over 56 lbs. in weight, should be sent to the Military Forwarding Officer, Avonmouth Docks, except those for North Russian Expeditionary Force, which should be sent to the Military Forwarding Officer, No. 9 Shed, Royal Albert Dock, London, E.16.

The Postmaster-General announces that letters and parcels intended for delivery to the Mesopotamian Expeditionary Force by Christmas should be posted so as to reach London not later than Oct. 5th. Those for the East African Expeditionary Force should be posted at least a week earlier.

THE RETIREMENT OF MR. ALBERT VICKERS.

In view of his advanced age and somewhat failing health, Mr. Albert Vickers has placed his resignation of the chairmanship of Vickers (Limited) in the hands of the Board, which they have accepted with sincere regret.

In the letter conveying his resignation Mr. Albert Vickers recalls that he spent 64 years of his life with the company, and that its fortunes have always been bound up with his own. While, for the reason given, Mr. Albert Vickers feels compelled to resign the chairmanship, he states that he will always be at the service of his colleagues for consultation and advice.

Mr. Vickers's resignation took place as from yesterday which was his 80th birthday, and Mr. Douglas Vickers is appointed chairman to succeed Mr. Albert Vickers as from that date.

THE DAVIDSON AVIATION COMPANY'S SPORTS.

There was a big muster at the second annual sports meeting of the Davidson Aviation Company held at the Fulham Football Ground (by the kind permission of Mr. Kelso) on September 14th, and so lengthy was the programme that the last item was not reached until 9 o'clock.

Mrs. Chester, wife of Mr. W. Ewart Chester, the Managing Director, presented the prizes, and throughout the afternoon the proceedings were enlivened by the Band of the Metropolitan Police.

All the events were keenly contested, and some close finishes were witnessed.

Unfortunately space will not permit the publication of the lengthy prize list.

Mr. Frank Guest acted as secretary, and Messrs. G. H. Cude and Barnes as starters, the judges being Messrs. J. Bain, G. H. Cude, G. Bonnett, B. Claridge, and G. Gardner.

THE AIRCRAFT TRADER

MARKET TOPICS.

Prices are for Quantities on usual Terms.

Sept. 19th.

COPPER.—All efforts are now being concentrated upon production, and, although there is optimism in certain quarters, it does not look as though the total output for 1918 will exceed 1917. According to reports received from U.S.A., huge demands are being made for Copper, and although there will certainly be sufficient Copper to meet war demands, there is not much likelihood of a surplus being accumulated. The position here remains unchanged. Official prices remain the same.

TIN.—The new arrangement centralising buying for the Allies is working satisfactorily and the market generally shows a much steadier tone. There is a feeling that the continuous decline in price has not exhausted itself, and, in consequence, buyers are holding back; it has even been suggested in some quarters that there is still a possibility of prices in the East reaching £300. This does not appear probable. At the same time, it is more than likely that they will fall lower than the prices at which importers are compelled to sell at present. Stocks have been increased recently, and good quantities of Tin are available at present. Prices have remained unaltered for the past few days.

Comparative Prices.

To-day (18th)	£344	0	0 per ton.
Sept. 10th	£344	0	0 per ton.
Sept. 4th	£352	0	0 per ton.
August 21st	£375	0	0 per ton.
August 2nd	£399	0	0 per ton.
Highest price, 1917	£309	0	0 per ton.

LEAD.—The position is still unchanged; supplies for national requirements are satisfactory, although in U.S.A. there is a keen shortage and consumers are finding it difficult to buy.

STEEL.—There appears to be plenty of steel available at present, notwithstanding the increasing demand Supplies of Cast and High Speed Steels are also satisfactory at present. Official prices are unaltered.

TIMBER.—The Timber market is entirely void of interest at present. Fair supplies of Spruce continue to come forward; on the other hand, the demand is increasing considerably. Very little Mahogany appears to have been received recently. At the same time, there does not appear to be a very serious shortage.

The Plywood position is much more satisfactory than it was 12 months ago, notwithstanding the huge demands which have had to be met, and the delay in issuing an order controlling this material would indicate the possibility of the Controller leaving this material alone. Prices are unchanged.

FABRIC.—The position is unaltered. Supplies are being fairly well maintained and prices are unchanged.

THE MONTHLY MARKET PRICE LIST.

Sept 19th, 1918.

The prices given below are the prices ruling on the above date.

Aluminium.*

Ingot	£225 per ton.*
Remelted	£210 per ton.*

Brass.

Sheets	16½d. per lb.
Strip	15⅝d. per lb.
Wire	15⅝d. per lb.
Tubes	17¼d. per lb.
Castings	16d. per lb.
Turning Rod	14¼d. per lb.
Brazed Tubes	19½d. per lb.

Copper.*

Ingot, Standard, Cash	£122 per ton.*
Ingot, Standard, 3 mos.	£122 per ton.*
Best Selected (Nett)	£135 to £131 per ton.
Sheets	£161 per ton
Wire	17½d per lb.
Tubes, S.D.	20½d. per lb
Tubes, Brazed	20½d per lb.
Rivets	2s. per lb., basis.

Fabric.*

Linen, R.A.F., 17C, Spec., 36 in. wide, 3s. 1d. p. yd.
Linen, R.A.F., 17C, Spec., 38in. wide, 3s. 3d. p. yd.
Linen, R.A.F., 17C, Spec., 42 in. wide, 3s. 7d. p. yd.
Spaced, R.A.F., 17C, Spec., 37½ in. wide, 2s. 1d. p. yd

Gun Metal.

Castings ..... 1s. 9d. to 2s. 1d. per lb.

Lead.*

Virgin Pig	£29 per ton, c.i.f.
Virgin Pig	£30 per ton, ex stores.
Sheets	£39 10s. per ton, D/d.
Pipes	£40 per ton.
Dry White	£46 10s. per ton, less 5 per cent
White in Oil	£53 per ton. (lots over 5 cwt. less 5 per cent.)
White in Oil	£55 per ton. (lots under 5 cwt. less 5 per cent.)
Red	£42 per ton, less 2½ per cent.

Nickel.

Nickel ..... £225 per ton

Phosphor Bronze.

Ingots, 5 cwt., and under..... £169 to £199 per ton
(Subject to Copper and Tin Fluctuations.)
Castings ..... 1s. 9d. to 2s. 2d per lb.

Phosphor Copper.

Ton lots ..... £200 to £205 per ton.

Silver.

Silver ..... 49½d. per oz.

Solder.

Plumber's ..... 140s.
Tinman's ..... 189s.

Steel.

High Speed, 14 p. cent., Tungsten, 3s. 8d. per lb., basis.
High Speed, 18 p. cent., Tungsten, 4s. 5d. per lb., basis.

Alloy Steels to Air Ministry Specifications.*†

Round and Square:—

Specification No. S2	£86
Specification No. S2 (bright-drawn)	£115
Specification No. S8	£86
Specification No. S10	£70
Specification No. S12	£75
Specification No. S14	£43
Specification No. S15	£70
Specification No. S16	£70
Specification No. S17	£75
Specification No. S18 (oil-hardened)	£85
Specification No. K1	£75
Specification No. K2	£75
Specification No. K3	£86

The above prices are for ¼ in. to 5/16 in. only, other sizes are proportionate.

Hexagons.

	.455 and .525	.601 to .710.
Specification S2	£79	£77
Specification S8	£79	£77
Specification S2 (bright-drawn),	£112	£112
Specification S8 (bright-drawn),	£112	£112

Spelter.

English f.o.b., Birmingham ..... £54 to £50.

Tin.

Tin £343

Tinplates.

Tinplate ..... 32s. 6d., basis, f.c.t.

Timber.

	†Official.	Merchants.
Silver Spruce,		10s. 4d., c.f.
*English Ash—		
Selected Logs		7s. 6d., c.f., f.o.r.
Selected Lengths		10s. 6d., c.f., f.o.r.
Mahogany		2s. to 2s. 6d.
Walnut		2s. to 2s. 6d.

* For further details see Home Grown Timber Prices Order.

CANNONS' (LINCOLN) AEROPLANE GLUES

"IL PROPELLER" (Cake Glue)
FOR PROPELLERS.

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FOR CLASS 1 WORK (NOT PROPELLERS).

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ZINC.

Zinc Sheets (American).....£100, f.o.b., New York.

SCRAP MATERIALS (LONDON PRICES).

ALUMINIUM.

Description.	Price per ton on sale to refiner, delivered at refinery.
Sheet cuttings and rods containing a minimum of 96 per cent. Al.	£160 0 0
Old rolled, etc., containing a minimum of 96 per cent. Al.	120 0 0
Spinnings, punchings, and thin small scrap; also painted and varnished scrap that needs melting, containing a minimum of 96 per cent. Al.	105 0 0
Lump scrap from aero castings and material of equivalent value, containing 87 to 96 per cent. Al.	100 0 0
Turnings and Swarf, generally containing 87 to 95 per cent. Al.	87 10 0
Scrap, generally containing 80 to 86 per cent. Al.	80 0 0
Swarf and inferior Swarf, generally containing 80—85 per cent. Al.	70 0 0
All Scrap, containing below 80 per cent Al., not to exceed	65 0 0
All Swarf, containing below 80 per cent. Al.	50 0 0
Brass, Heavy Selected	£90
Copper, Clean	110
Copper, Brazery	90
Gun-metal, Scrap	124
Lead, no Draft	26
Zinc, Old	43

* Official Prices.

† Includes Parcel Inspection only.

‡ Prices include Delivery in the U.K.

NON-FERROUS METAL.

The following announcement was made on Sept. 14th :—

The Board of Trade draws the attention of all companies, firms and individuals holding licences under the Non-Ferrous Metal Industry Act to the fact that these licences do not dispense the holders from complying with the Regulations which have been made under the Defence of the Realm Act with respect to the sale or purchase of non-ferrous metals.

The necessary permits under these regulations must be obtained from the Ministry of Munitions in respect of any sales or purchases of non-ferrous metals in the same manner as before the licences under the Act were granted.

THE "AIRCRAFT RAG."

The August edition of the "Aircraft Rag," the magazine of the Aircraft Manufacturing Co., Ltd., contains mostly accounts of sports and outings, being quite aptly styled the sports number.

It seems quite evident that the employees of the A.M. Co., Ltd., believe in that time-old proverb, "All work and no play makes Jack a dull boy," and not only believe, but wisely act up to it. A fête and sports gala and a day's outing on the river do much to rest the mind, and enable the majority to work with greater zest than previously. The prospective journalists among the staff of the A.M. Co., Ltd., did very well in their descriptive accounts of the pleasures enjoyed by many of the aircraft workers.

It is pleasing to note that the editors of the "Rag" have devoted the first page of this number to an appeal to the employees of the A.M. Co., Ltd., to support a deserving charity, the Prisoners of War Fund (R.A.F.). The life of the prisoner of war is hard, and it is too easy to imagine with what joy these men receive a parcel from England containing food and comforts. One feels certain the workers of the Aircraft Industry will do their best for the active service aviators, who have been captured, by each giving something.

There are some accounts from the front of British aviators' fights when greatly outnumbered, which will make enjoyable reading for many.

The notes by Mr. G. Watts, A.C.G.I., B.Sc., on "Materials Used in Aeroplane Construction," are both educational and interesting, as is the article by Erica Dunkerly, "The War Work of the 'Y.M.'"

AIRCRAFT SUPPLIES.

Quite recently one visited the showrooms of the Aircraft Supplies Co., Ltd., at Ascol House, Long Acre. The first thing that attracted attention on entering was a table for the benefit of customers. This table was supported by four Curtiss aeroplane struts, and braced by streamline wire. The top was divided into four sections by the ingenious device of letting a four-bladed airscrew into the flat surface of the table.

Another feature of good workmanship was a two-bladed airscrew fitted horizontally to the wall, and containing a clock fixed into the hub.

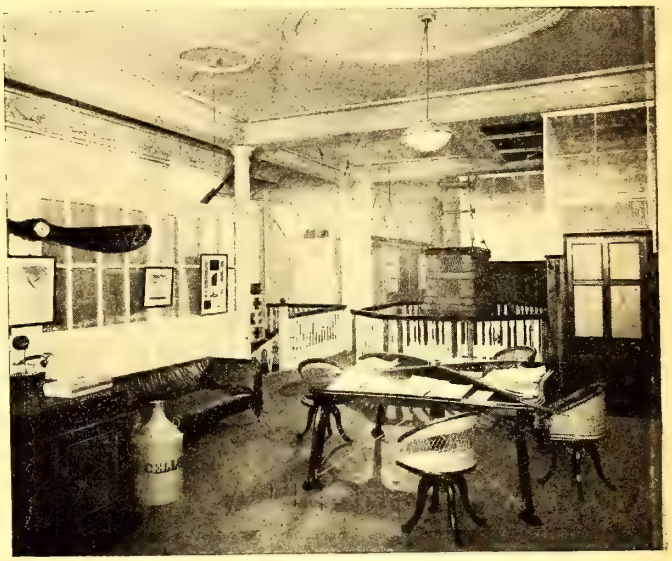
A balloon-basket was slung from the ceiling and suspended over a railed-in aperture looking down on to the sorting-counter in the basement.

At present no sufficiently large building can be acquired by this firm, but with the premises now occupied they do very well, and have everything carried out systematically.

All packages containing goods for stock are brought into the showrooms, and from there they are sent down to the sorting-counters by lift. After being taken out of the lift, they are sorted and placed in their respective drawers arranged in numerical order in long rows.

In these drawers are contained all A.G.S. parts, from the smallest to the largest sizes, and many other different fittings and appliances, such as dope-cans, brushes, and tapes, etc. The Aircraft Supplies Co., Ltd., can supply practically every kind of part needed for aircraft construction from stock.

The general manager's office is in the main building, as is the A.I.D. room. A flat, next door to the main building, contains the counting-house and cashier's office. Across the corridor in another flat is the advertising department, and adjoining that the sales room.



The Entrance Hall at Ascol House

In the sales office many charts are kept, showing at a glance the number of visits to the various manufacturers all over the country paid by Ascol representatives, and the number of orders secured by them day by day. Another chart shows the number of orders each traveller receives each month, and yet another chart denotes the number of orders received through advertising as against those secured by the firm's representatives.

Ascol House is very well managed, and there is every facility provided for persons calling there.

After going all round the showrooms, one went on a visit to the works of this company, which are fairly large.

The first operation one was shown was the making of an airscrew hub bolt on the bar-lathe.

A piece of hardened steel was cut to a cylindrical shape, a ledge being left at the end of the metal. The bar was then smoothed with emery paper, and afterwards threaded, thus finishing the bolt in a very short time.

One then went on to view the making of the nut for the bolt. This was cut from a hexagon bar, and then an internal thread was made, after which the metal was tapped, and then again threaded, only this time by hand. The next operation was the milling of the nut, making it quite smooth, and then two right-angled cross-cuts were made on the top, this operation finishing the nut.

Many other operations were shown, which cannot be described in detail. Among them was the making of aircraft strainers, small nuts and bolts, and rivets.

This factory is electrically powered, the electricity being taken from the main. The power is carried to the rooms by overhead-shafting, and then by belts to the machines.

One would think that, on the whole, the output is quite good, compared with the size of the works.

The Aircraft Supplies Co., Ltd., might well be described as the central clearing-house for aircraft parts. By ordering from this company, manufacturers will be able to obtain quantities of various parts without having the trouble of issuing a number of orders to the different makers of the parts needed.—R. M



A Comfortable Operator can produce 80% efficiency all the while.

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BECAUSE:

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G. H. MANSFIELD, Managing Director.

ASCOL

AIRCRAFT FINANCE

CURRENT TOPICS.

National Finance.

Once again there are "feelers" in circulation relating to a possible modification or amendation of war financing. Whether anything definite results remains to be seen. Without a doubt there is a considerable amount of money in the country which might be enticed into the funded debt, as distinct from the floating debt represented by Treasury Bills and the like, by a little judicious and thoughtful alteration in the terms of the borrowing.

The nation is paying 3½ per cent. for its loans on three and six months' Treasury Bills, and rather more than 5 per cent. on National War Bonds. Many institutions would prefer to lend money at 3½ per cent. and have the capital liquid in Treasury Bills than lock it up in 5 per cent. bonds or even a loan possessing a less degree of liquidity. And there are other considerations to make short term loans more attractive to the detriment of the other forms of war financing. A little boldness and energy on the part of the Government might prove beneficial to the nation.

Active Aircraft Shares.

Aircraft and kindred shares are standing out conspicuously active and strong. Napiers, for example, have commanded up to 42s., which is a considerable advance on the price of recent weeks, in expectation of an increased dividend. It is highly probable that these expectations will be realised. Rovers, too, have been actively bought at about 80s. on hopes that the annual report due very soon will contain proposals of a bonus share issue.

Sunbeams have been good also, and fresh buying has been in evidence for Darracqs. Rolls-Royce showed little animation, but Aircraft Manufacturing Participating Preference find buyers at 26s., the hopes of the participating rights proving valuable this year still being entertained. The new issue of capital holds Armstrongs in check, while Vickers have been steadily absorbed in large quantities up to 53s.

Armstrong-Whitworth's Annual Accounts.

One searches in vain through all the statements made by the chairman of Armstrong-Whitworth for a reference to the pleasant surprise packet confidently predicted by the Stock Exchange. But one thing has been almost definitely promised, and that is the long-delayed annual accounts of 1916 and 1917, which may be expected in two or three months' time. They should prove very interesting documents, though one is inclined to suspect that they will not be so informative as they might be.

Hiding Profits.

Without a doubt the company, because of its pre-eminent position in the armament industry, must have been accumulating enormous profits out of the war quite out of proportion to the amount distributed in dividends to the shareholders. Will the major portion of these be diplomatically buried, for political and economic reasons, in the abyss of the annual accounts? It is practicable to do so, for the auditor is not guileless.

Capital Needed for the Future.

A lot was said about preparations for the future, and this was the excuse for the creation of £2,500,000 Third Preference shares, and the reservation of the issue of the balance of £1,000,000 of Second Preference shares. The company must be kept well in funds to be able to take full advantage of future opportunities, and of the period of industrial and commercial transition following the war. It is the intention to issue only £1,000,000 of these Third Preference shares at present. They will carry 6½ per cent. interest without cumulative rights thereto, and preference will be given to existing shareholders. Those who fancy an investment of this type could do worse than apply for some of these new shares.

A Dividend Declaration.

At the annual general meeting of the East Anglican Engineering Co., Ltd., held at Stowmarket, on September 7th, Mr. L. Tibbenham presiding, and supported by Mr. Drury Stowe, director, it was unanimously resolved, after allowing for depreciation, reserve for bad debts, directors' fees, a dividend of 6 per cent. should be paid to all shareholders. A vote of thanks was passed to the Chairman for the successful working of the company, this being the first dividend paid since its formation in 1898.

An Engineering Amalgamation.

It is announced that Ruston, Proctor, and Co., Ltd., the well-known firm of agricultural and general engineers, boilermakers, etc., of Lincoln, has acquired the old-established business of Messrs. Richard Hornsby and Sons, of Spittlegate Ironworks, Grantham, a concern with a world-wide reputation as engineers and machine manufacturers. The latter company's works at Grantham and Stockport are extensive, well equipped with modern plant and machinery, with over 3,000 employees. At Ruston, Proctor's five works the number of employees is 7,600, so that the combined businesses will make a powerful combination. The name under which the new combination will be carried on is Ruston and Hornsby (Limited). Ruston, Proctor, and Co., Ltd., was registered in 1889 to take over the business of the firm of the same name, and its authorised capital is £950,000. During the past 10 years dividends ranging from 7 to 10 per cent. have been paid, the profits for the year to March 31st last amounting to £169,744. Richard Hornsby and Sons was registered in 1879, and its dividend record has been a satisfactory one, 6½ per cent. being paid for a number of years past, the subscribed capital amounting to £455,450.

NEW COMPANIES.

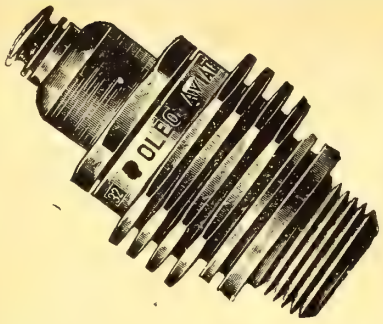
Anglo-Continental Cairo and Eastern States Air Routes, Ltd.—Private Company. Registered Sept. 17th. Capital £100 in £1 shares. Objects and other particulars similar to those of the Eastern Aerial Services, Ltd. (q.v.) Registered office: 29a, Charing Cross Road, W.C.

Eastern Aerial Services, Ltd.—Private Company. Registered Sept. 17th. Capital £100 in £1 shares. To establish, maintain and work lines of aerial conveyances between the United Kingdom and European countries and Egypt and the Eastern States, or between other places, to manufacture and deal in aircraft, to act as tourist agents and contractors, etc. The subscribers (each with one share) are:—Lionel Phillips, 3, Kingscroft Road, Brondesbury, N.W., exporter; Wm. H. Lewis, National Hotel, Upper Bedford Place, W.C.1, aircraft manufacturer. The first directors are:—Lionel Phillips, Wm. H. Lewis and Lt. A. McKenzie Willmott, A.S.C. Registered office: 29a, Charing Cross Road, W.C.

British Gauge Manufacturers' Association, Ltd.—Registered Sept. 17th, limited by guarantee with 100 members each liable for £5 in the event of winding up, to encourage, protect and promote the British gauge manufacturing industry. The first members of the Committee are:—W. C. Fitter, Upper Market Street, Woolwich, S.E.; W. J. Bassett-Lowke, Kingswell Street, Northampton; S. H. Jones, 84-6, Commercial Street, Newport, Mon.; S. A. Harstmann, James Street West, Bath; A. L. Pailthorpe, 115, Whitehorse Road, Croydon; P. A. Bartley, 140, Queens Road, Clarendon Park, Leicester; L. H. Hounsfield, Trojan, Ltd., Vicarage Road, Croydon. Registered office: 44, Caxton House, S.W.1.

Navarro Aviation Co., Ltd.—Private company. Registered Sept. 12th. Capital £35,000 in £1 shares. (15,000 10 per cent. cum. pref. and 20,000 ord. As title. Agreement with H. B. Stocks. The subscribers (each with one share) are:—H. B. Stocks, 109, Chestergate, Stockport, Cheshire, engineer; R. Spyers, 5, Victoria Street, S.W., Barrister. The subscribers are to appoint the first directors. Registered office: 5, Victoria Street, S.W.

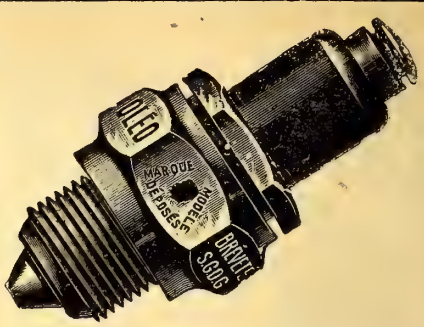
Wellesley-Brown Aircraft, Ltd.—Registered Sept. 16th. Capital £5,000 in £1 shares. Aeronautical, electrical, motor and general engineers, designers and builders of aeroplanes, seaplanes, airships, yachts and steam and other ships, barges, motor and other boats, etc. The subscribers (each with one share) are:—G. L. Mowbray, Isfryn, Kew, banker; R. Wellesley, 10, Kildowan Road, Goodmayes, contractor; W. J. Barnett, 4, Whitehall Court, S.W.1, consulting engineer; G. J. Bone, 34a, Garthorne Road, S.E.23, bank cashier; D. P. Hartnett, 93, Bristol Road, Forest Gate, E.7, secretary; H. Le Mesurier Hunt, 9, Gunnersbury Avenue, Ealing, W.5, secretary; R. Dickens, 33, Chelverton Road, Putney, S.W., solicitor's clerk. Minimum cash subscription: 7 shares. The first directors are:—G. L. Mowbray, R. Wellesley and W. J. Barnett. Registered office: 23, Suffolk Street, Pall Mall, S.W.1.



TYPE No. 32.



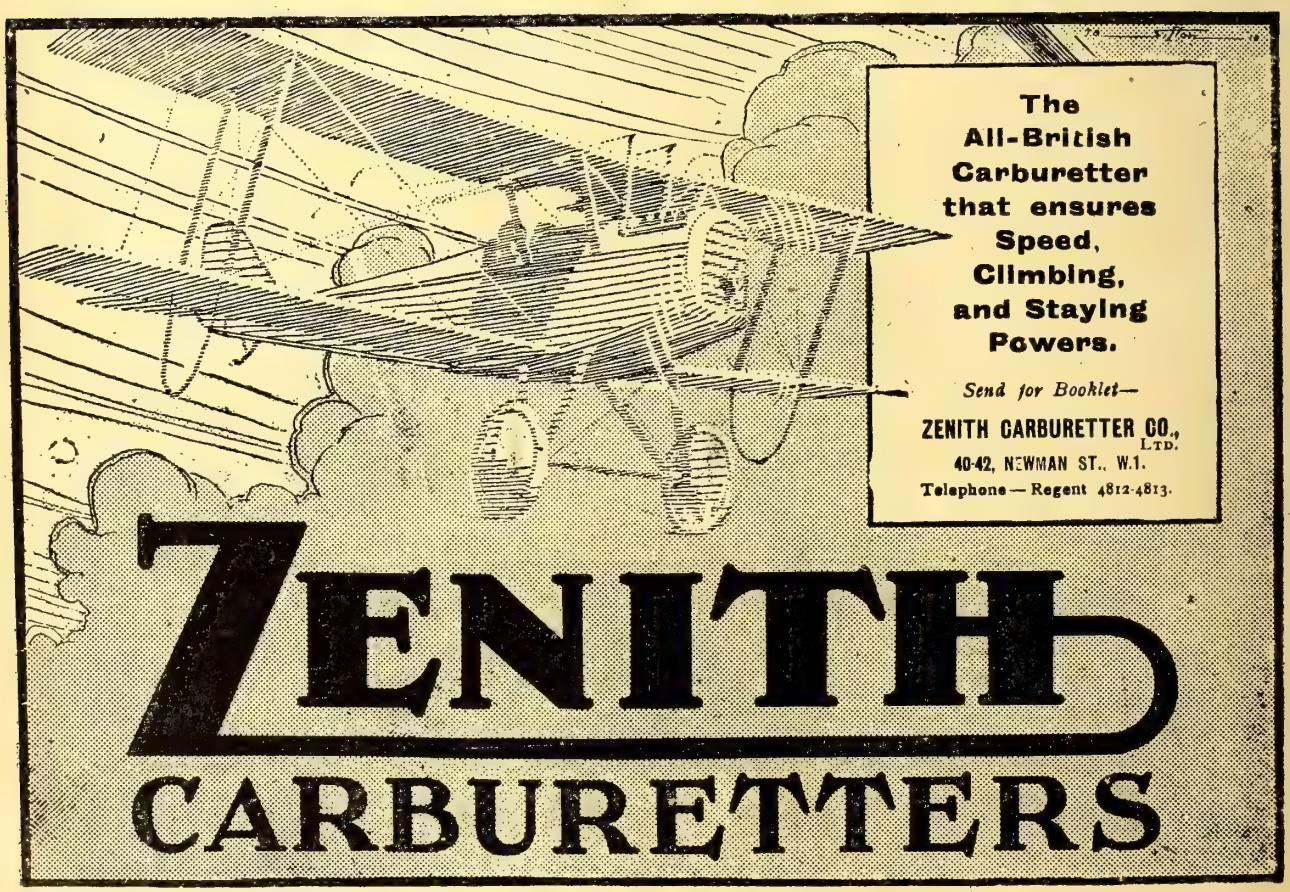
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(Continued from page 1104.)

return journey would only be accomplished with extreme difficulty. However, knowing the urgency of his mission, he completed his reconnaissance, penetrating 12 miles behind the enemy lines. On the return journey, owing to the strength of the gale, he was forced to descend to a very low altitude, and was subjected to heavy anti-aircraft and machine-gun fire, which badly damaged his machine.

Lt. INDRA LAL ROY.

A very gallant and determined officer, who in 13 days accounted for nine enemy machines. In these several engagements he has displayed remarkable skill and daring, on more than one occasion accounting for two machines in one patrol.

Lt. (Temp. Capt.) THOMAS SYDNEY SHARPE (Glouc. R.).

A gallant officer who has always led his patrol with marked skill and judgment. On one occasion he chased down an Albatros scout and caused it to crash. He afterwards attacked five enemy machines, destroying two. On the following day, encountering four Albatros scouts, he engaged one, which crashed. Proceeding on his patrol, he met a formation of enemy scouts; he chased one and destroyed it.

(Owing to pressure on space a number of citations to decorations have been unavoidably held over.)

WAR OFFICE, Sept. 16th

His Majesty the King has been graciously pleased to approve of the following Awards to the undermentioned Officers and Warrant Officers, in recognition of their gallantry and devotion to duty in the Field :—

AWARDED A BAR TO THE MILITARY CROSS.

Temp. Lt. (temp. Capt.) JOHN WILLIAM ALDRED, M.C., R.A.F.

For conspicuous gallantry and devotion to duty whilst taking part in offensive patrols. During recent operations he destroyed four enemy aircraft and drove down three others out of control. He also did much successful low bombing and firing at low targets. He did splendid service. (M.C. gazetted March 26th, 1917.)

Lt. (temp. Capt.) ALFRED CLAYBURN ATKEY, M.C., R.A.F.

For conspicuous gallantry and devotion to duty. During recent operations he destroyed seven enemy machines. When engaged with enemy aircraft, often far superior in numbers, he proved himself a brilliant fighting pilot, and displayed dash and gallantry of a high order (M.C. gazetted June 22nd, 1918.)

Temp. Sec. Lt. (temp. Capt.) ANDREW WEATHERBY BEAUCHAMP-PROCTOR, M.C., Gen. List., attd. R.A.F.

For conspicuous gallantry and devotion to duty while leading offensive patrols. He has lately destroyed three enemy machines, driven down one other completely out of control, and carried out valuable work in attacking enemy troops and transport on the ground from low altitudes. He has done splendid service. (M.C. gazetted June 22nd, 1918.)

Lt. (temp. Capt.) JAMES DACRES BEIGRAVE, M.C., Ox. and Bucks. L.I., attd. R.A.F.

For conspicuous gallantry and devotion to duty whilst leading offensive patrols. In four days he destroyed two enemy machines and drove down four others. The odds were heavy against him, and he did magnificent work. (M.C. gazetted July 18th, 1917.)

Lt. GERALD ALFRED BIRKS, M.C., R.A.F.

For conspicuous gallantry and devotion to duty in destroying four enemy aeroplanes, two of which were destroyed in one fight. (M.C. gazetted in this Gazette.)

Temp. Capt. PETER CARPENTER, M.C., Gen. List and R.A.F.

For conspicuous gallantry and devotion to duty. He led an offensive patrol against seven of the enemy; three were destroyed. Again he led a patrol of three machines against six of the enemy; two of them were destroyed and one driven down out of control. Later, with two other pilots, he engaged twelve hostile machines, of which three were destroyed and one driven down out of control. He shot down several machines himself (M.C. gazetted March 4th, 1918.)

Lt. RALPH ST. JOHN DIX, M.C., Lond. R., and R.A.F.

For conspicuous gallantry and devotion to duty in co-operation with artillery and reconnaissances at low altitudes. While on contact patrol, he observed two hostile T.M.'s in action, and getting no reply from the artillery, he dived at them, silencing both after firing about 200 rounds. Later, he drove off two hostile two-seaters. After this he was wounded in the arm, attacking a T.M. battery, but got safely back to his aerodrome, making an excellent report before being taken to the casualty clearing station His energy and courage inspired his flight to a firm sense of duty. (M.C. gazetted June 22nd, 1918.)

Lt. (temp. Capt.) ROBERT ARTHUR GROSVENOR, M.C., Dgn Gds. and R.A.F.

For conspicuous gallantry and devotion to duty in attacking enemy aircraft. He has lately destroyed two machines and driven down four others out of control. He has shown brilliant leadership and dash against heavy odds. (M.C. gazetted July 26th, 1918.)

Temp. Sec. Lt. (temp. Capt.) DONALD RODERICK MACLAREN, M.C., Gen. List, R.A.F.

For conspicuous gallantry and devotion to duty as a fighting pilot. He has recently destroyed no less than nine enemy machines, and proved himself a brilliant fighting pilot against enemy aircraft often far superior in number. He has done magnificent service, and set a splendid example to his patrol. (M.C. gazetted June 22nd, 1918.)

Lt. TOM CECIL NOEL, M.C., K.O.S.B., Spec. Res., attd. R.A.F.

For conspicuous gallantry and devotion to duty. In four days he and his pilot destroyed seven enemy machines and drove down three out of control. His courage and skill are of the first order, and of inestimable value to his squadron. (M.C. gazetted Sept. 26th, 1917.)

Temp. Sec. Lt. ARTHUR BARLOW WHITESIDE, M.C., R.A.F.

For conspicuous gallantry and devotion to duty. This officer has taken part in over fifty night bombing raids, many of which, carried out at heights considerably under 1,000 feet, and in adverse weather conditions, were only successful through the skill and energy displayed by him in discovering and attacking his objective. On one night in particular, after having successfully bombed a large ammunition dump, which was set on fire and blown up, he proceeded to drop bombs on a town which held large numbers of the enemy, also firing from a low altitude with his machine gun on the roads leading to it. Returning to his squadron he obtained more bombs and ammunition, and with the same observer proceeded to drop bombs on a train behind the enemy's lines. On several occasions his machine was badly knocked about by enemy fire from the ground. The devotion to duty and disregard of danger displayed by this officer have been admirable examples to all members of his squadron. (M.C. gazetted March 26th, 1918.)

AIR MINISTRY, Sept. 17th.

R.A.F.—The following temp. appts. are made :—Brig.-Gen. (Admin.). —Lt.-Col. (temp. Col.) N. D. K. MacEwen, D.S.O., and to be temp. Brig.-Gen. whilst so empld., Aug. 20th

Staff (Air) Officer, 1st Cl.—Maj. A. R. Martin, and to be temp. Lt.-Col. whilst so empld., Aug. 22nd.

Staff Officers, 2nd Cl.—And to be temp. Majs. whilst so empld. if not already holding that rank :—Capt. (temp. Maj.) N. B. Tomlinson, April 15th. (Air).—Maj. J. A. G. de Courcy, M.C., Aug. 14th; Capt. W. P. Groves, Aug. 21st.

Staff Officers, 3rd Cl.—Sec. Lt. (temp. Lt.) E. W. Vine, and to be temp. Capt. whilst so empld., July 31st; the initials of Capt. E. Page is as now described, and not as in "Gazette," July 19th.

Staff Officers, 4th Cl. (1st Grade).—And to be temp. Capts. whilst so empld., if not already holding that rank :—Lt. L. E. M. Gillman, April 20th; Capt. M. J. Golding, April 21st; Lt. R. N. Ball, Lt. W. A. C. Dicketts, Capt. M. H. Stephens, July 20th, Capt. R. L. Allport, Aug. 14th.

Staff Officers, 4th Cl. (2nd Grade) :—And to be temp. Capts. whilst so empld.—Lt. G. B. Anderson, Aug. 7th.

FLYING BRANCH.—Maj. B. L. Huskisson, D.S.C., to be temp. Lt.-Col. while empld. as Lt.-Col. (A.), July 27th.

Capts. to be temp. Majs. while empld. as Majs. (A.) :—W. H. Tolhurst, Aug. 30th; T. Gran, M.C., F. S. Moller, M.C., Sept. 10th.

Lts. to be temp. Capts. while empld. as Capts. (A.) :—J. L. S. Gill, Aug. 30th; C. M. Maud, Sept. 1st; A. W. Welsh, Sept. 2nd; R. Ivelaw-Chapman, Sept. 3rd; A. A. Callender, T. S. Symons, Sept. 4th; A. W. Franklyn, M.C., Sept. 7th; R. T. Jones, W. J. Peace, Sept. 9th; W. G. Albu, Sept. 10th.

Lt. E. W. Grant to be Lt. (Dir.), from (G.), Sept. 4th.

Lt. (temp. Capt.) T. G. G. Bohtlingk, M.C., relinquishes his temp. rank on reversion to Lt. (R.B.), Sept. 6th.

Lts. (Obsr. Officers) to be Lts. (A.) :—A. Sattin, Aug. 20th; I. G. Fleming, Aug. 23rd; A. C. T. Perkins, Aug. 24th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A.) :—W. W. Ferguson, June 24th; J. R. Robbins, June 28th; J. O'Donoghue, June 30th, A. V. Hansford, July 6th; T. C. Owen, E. G. Robertson, July 7th; G. Sutcliffe, July 13th; A. M. Wilson, J. A. G. Henry, L. S. Bowker, July 15th; C. R. Abrahams, July 27th; A. L. Fechnie, July 29th; E. Henriques, July 31st; W. A. F. Cowgill, Aug. 7th; C. B. Clark, Aug. 8th; R. C. Mills, Aug. 9th; I. B. Williamson, J. Thibaudeau, R. W. Murray, Aug. 10th; W. St. C. Slater, Aug. 11th; E. A. Burbidge, F. W. King, Aug. 12th; R. S. Gilbert, Aug. 13th; E. H. Henson, C. F. Cawley, C. C. M. Bell, Aug. 15th; E. G. Davies, S. H. Apling, W. McCullagh, Aug. 16th; R. W. Corner, Aug. 17th; W. R. Baskerville, C. A. Manzetti, W. M. Crofton, N. D. Cersigny, P. J. Waller, Aug. 18th; G. W. McDougall, V. G. Record, D. S. Davies, L. Ramsden, J. H. Bauer, W. B. Thomson, L. J. Emerton, Aug. 19th; F. Christelow, S. B. Taylor, C. L. Hudson, M. W. M. Burnside, Aug. 20th, W. H. C. Robson, E. Everington, H. Rawsthorne, H. J. Smith (date of 1st commn., Feb. 2nd), W. T. Laurie, C. J. Rogers, F. Cornwell, F. Wilde, Aug. 21st; L. Hart, C. Buckton, R. M. Balfour, M. S. Dickinson, W. W. Routledge, R. O'Neill, T. J. Maloney, Aug. 22nd; G. A. Coulter, F. Seddon, E. H. Thistlethwaite, W. Badger, H. H. Towne, T. T. Smith, R. J. Twilton, F. Clarke, E. H. Sparshott, C. H. E. Coles, Aug. 23rd; T. Whitman, H. Entwistle, A. B. Williams, H. C. Dean, W. B. Day, Aug. 24th; D. H. Edmiston, J. E. Marigold, S. Horne, D. G. Tory, R. Williams, Aug. 25th; W. H. McLaughlan, Aug. 26th; A. J. Prentice, F. Frith, J. Bullough, P. D. D'Albenas, A. E. Watson, S. Clark (date of 1st commn., Jan. 5th), E. E. Brown, A. M. Hayhittle, E. B. Marsh, C. S. P. Wallace, N. C. Mackey, Aug. 27th; G. T. Polkinghorne, Aug. 29th; S. Braby, Aug. 30th.

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (A.) :—R. G. A. Bingham, June 13th; E. W. Henry, Aug. 1st; A. B. H. Youell, A. H. Garland, Aug. 15th; J. C. Williams, Aug. 16th; A. A. Goodall, Aug. 17th, R. V. Gordon, C. N. L. A. Dunderdale, Aug. 18th; M. D. Hart, M. D. Moore, Aug. 19th; B. M. Carter, E. M. Lomax, Aug. 20th; A. S. D. Laidlaw, E. N. Fenton, Aug. 21st; C. N. Dilly, J. I. Sanderson, Aug. 22nd; J. Shaw, E. E. Middleton, Aug. 23rd; H. E. Light, L. N. Higgins, H. R. McL. Reid, Aug. 24th; O. W. Mitchell, Aug. 25th; F. A. Fairburn, G. P. H. Carter, Aug. 26th; F. J. Turvey, Aug. 28th.

The following are granted temp. commns. as Sec. Lts. (A.) :—C. L. Kelly (temp. Sec. Lt., N. Lan. R.), July 31st; C. E. C. Penny (Lt., R. Fus.), and to be Hon. Lt., Aug. 14th; J. C. Burbidge (Lt., Rif. Brig., Spec. Res.), and to be Hon. Lt., Aug. 17th; H. H. Channing (temp. Sec. Lt., K. O. Sco. Bord.), D. Wood (Lt., R.E.), and to be Hon. Lt., E. S. Seaton (Lt., Lond. R., T.F.), and to be Hon. Lt., R. F. Shutes (Lt., Norf. R., T.F.), and to be Hon. Lt., C. E. Black (Lt., C.F.A., C.E.F.), and to be Hon. Lt., Aug. 19th; J. Jackson (temp. Lt., Norf. R.), and to be Hon. Lt., S. Bennett (Sec. Lt., Ches. R., T.F.), W. Joffe, D.S.O. (Sec. Lt., Yorks. L.I., T.F.), Aug. 20th; F. Sumsion (Lt., Welsh R., Spec. Res.), and to be Hon. Lt., P. Seagrave (Sec. Lt., Lpool. R., T.F.), Aug. 21st; H. V. Taylor (Lt., Durh. L.I., T.F.), and to be Hon. Lt., Aug. 22nd; L. S. R. Jones (Sec. Lt., Devon R.), D. I. M. Kennard (Capt., High. L.I., Spec. Res.), and to be Hon. Capt., J. Hunter (temp. Sec. Lt., Arg. and Suthd. Highrs.), Aug. 24th; D. C. Lockwood (Lt., Notts and Derby R., T.F.), and to be Hon. Lt., C. E. Rattee (Lt., New Brunswick R., C.E.F.), and to be Hon. Lt., C. G. Tanner (Lt., Herts Yeo., T.F.), and to be Hon. Lt., C. Berkeley (Lt., C. Gds., Spec. Res.), and to be Hon. Lt., Aug. 25th; A. P. Godfrey (temp. Sec. Lt., R. Lanc. R.), Aug. 26th; T. E. Foster (Sec. Lt., R.F.A.), A. J. F. Bawden (Capt., D. of Corn. L.I., T.F.), and to be Hon. Capt., J. C. Wilson (Sec. Lt., K. Lpool. R., T.F.), A. A. Downs (Sec. Lt., R. Suss. R., Spec. Res.), N. H. Jay (Sec. Lt., Suff. R., T.F.), E. G. Oliver (temp. Sec. Lt., Middx. R.), Aug. 27th; M. W. Nolan (temp. Lt., N. Lanc. R.), and to be Hon. Lt., W. R. Christian (Sec. Lt., R.F.A., Spec. Res.), Aug. 28th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A.) :—L. G. Woolhouse, July 19th; R. G. Adams, C. H. Ahrens, L. E. Aldrich, M. Baker, W. Ballantyne, W. H. Barry, W. C. Birt, O. E. Bissell, G. Bolstad, S. R. Byrne, A. L. Burran, G. F. Boulton, G. H. Carley, J. D. Chisholm, J. M. Cram, A. McI. Davidson, G. R. Dranfield, F. W. Ervine, R. E. Gillespie, J. W. Graier, R. T. Graham, F. Gouthro, H. H. Harvey, K. Hayward, W. D. Hayter, N. L. Head, J. H. Hodgins, W. A. Howden, H. Kellman, S. W. Kesten, J. F. Lenahan, W. E. Lewis, L. H. L'Hollier, M. P. H. Liddy, C. R. Mills, E. McC. Moir, N. J. Moran, V. C. Moynes, D. L. Murchison, C. R. Murray, M. M. Nesbit, R. N. Patterson, K. T. Phillips, W. P. B. Pugh, J. B. Roberts, C. J. Robinson, P. G. Rodier, J. E. Schingh, S. J. Shaw, E. W. Swackhamer, J. Weeding, H. B. L. Wilkinson, C. J. Wright, Aug. 1st; T. H. Allan, H. E. Archdekin, C. E. Arnold, J. E. Bancroft, R. W. Birdsall, F. H. Brady, F. T. Briggs, H. Brooks, W. R. Buchanan, J. A. Cartwell, H. T. Clark, C. R. B. Clarke, F. Campbell, O. V. Crawford, A. R. W. Dalley, F. Donnelly, E. J. Edwards, P. W. Ford, R. Foy, J. P. Gilbert, W. Goldbeck, J. R. H. Hall, T. T. Hazlewood, H. E. Hieatt, E. B. Hubbard, C. B. Humphrey, A. G. Humphrey, S. N. K. Jones, C. B. Joy, R. W. Kellett, W. Lavoie, R. E. Leary, C. B. Loomis, E. J. Lynch, J. E. S. Lytell, W. F. MacDougall, C. E. Marrin, C. G. Mathias, J. Mellor, G. A. Millar, H. A. Miller, H. G. Mitchell, W. G. Moore, L. J. Murray, J. R. L. McGowan, W. J. McNab, R. G. Ostrom, J. M. Patterson, L. B. Patterson, W. Penhall, J. H. A. Pope, C. Reilly, J. E. H.

Rogers, R. J. Sergent, A. L. Silverson, C. H. Slater, H. C. Sweetman, W. H. Taylor, W. F. Teale, D. L. Thorburn, H. Waddington, C. T. Ward, A. V. Waters, Aug. 8th; A. F. Arnold, W. G. Benson, G. A. Boyer, L. T. Bradley, C. J. Church, E. S. Clark, A. Demorest, J. W. Devlin, H. Dove, T. W. Duncan, E. V. Finland, P. A. Freeman, R. J. Groome, L. E. Gunn, J. W. Haig, C. Herz, J. L. Hever, N. E. Horton, E. S. Hunt, L. J. Hunter, M. Hyman, F. D. Kilts, R. L. Jacks, L. H. Jackson, A. J. Lacasse, P. Lewis, G. F. Mack, T. S. McKechnie, W. A. Middleton, E. R. Moore, T. R. Moore, F. L. Moorehouse, H. P. Mowat, G. H. Murray, C. W. Pattison, L. R. Pedlow, W. L. Phelan, C. F. Purdy, G. D. Robertson, G. G. Ross, P. G. Rowe, L. I. Sangster, H. V. Sarjeant, L. Satterthwaite, M. C. Sherwood, R. D. Smith, R. C. Stephens, A. T. Venëss, A. R. Webster, G. J. Moore, Aug. 15th; W. A. Henry, Aug. 18th; F. R. L. Allen, J. M. Petch, H. Butlin, A. R. Pratt, K. C. Whitwell, L. Whitfield, C. E. Elliott, D. A. Thomson, S. W. Smith, J. Pate, J. D. Sloss, B. W. Weight, W. A. Peters, E. V. Lockyer, E. Tomkins, W. L. Lewis, R. C. Adams, C. M. Thompson, C. H. Thomson, O. Taylor, S. H. Potter, C. Farnon, W. H. Isted, J. W. Baxter, T. Cuthbert, C. S. Booth, R. V. D. White, Aug. 30th; B. Turner, H. M. Lang, R. J. Glen, R. C. Jones, N. F. Moxon, T. B. Young, A. E. Sissing, C. F. Williams, W. E. Finch, H. L. Wilcox, C. C. Williamson, J. D. Swallow, P. J. Parry, J. S. Newman, C. Lambe, A. Knox, F. G. Reid, L. Harrison, M. A. Watts, Aug. 31st; W. E. Dance, Sept. 1st; R. K. Dickie, Sept. 2nd; R. D. Broad, Sept. 3rd; S. Poole, H. J. Berry, Sept. 4th

Sec. Lt. H. S. Philp (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt. (A. and S.), June 3rd.

Sec. Lt. J. M. Brown (Sco. Rif., T.F.) is granted a temp. commn. as Sec. Lt. (A. and S.), May 18th.

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. comms. as Sec. Lts. (A. and S.):—M. H. Tench, June 7th; A. R. Thatcher, July 12th.

The following Cadets are granted temp. comms. as Sec. Lts. (A. and S.):—R. W. G. Le Sueur, June 8th; L. D. H. Nel, Aug. 10th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A. and S.):—G. A. Robson, June 21st; E. P. Marren, W. Leslie, June 24th; C. B. Barton, June 25th; B. B. Sampson, July 6th; A. C. Buchanan, E. M. Connell, H. J. Pike, A. H. Cruickshanks, J. S. van R. Van Der Spuy, A. A. T. Favard, I. P. B. Davies, W. S. Long, July 19th; W. P. E. S. Walker, July 23rd; J. W. McKinty, July 30th; A. J. Price, July 31st; H. Floyd, Aug. 13th; A. L. Corson, Aug. 16th.

Sec. Lt. V. T. H. Ffrench (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Lt. (K.B.), Aug. 21st

The following are granted temp. commns. as Sec. Lts. (K.B.):—A. Paveley (temp. Sec. Lt., attd. K. O. Sco. Bord.), July 1st; L. Clark (temp. Sec. Lt., attd. R. Berks R.), N. V. Gay (temp. Sec. Lt., Oxf. and Bucks L.I.), L. S. Duffill (Sec. Lt., E. York. R., T.F.), Aug. 17th; A. R. Blakeley (temp. Sec. Lt., Suff. R.), Aug. 24th; E. F. Smallbone (Lt., R.G.A., Spec. Res.), and to be Hon. Lt., R. P. Greey (temp. Sec. Lt., attd. Middx. R.), W. C. S. Smith (temp. Sec. Lt., attd. E. Lan. R.), Aug. 31st.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (Obsr. Officers):—F. H. Paulton, May 7th; W. Urwin, L. Sabine, Aug. 30th; J. Myers, Aug. 31st; W. H. Hoskings, Sept. 11th; R. Fox, Sept. 13th.

The following are granted temp. commns. as Sec. Lts. (Obsr. Officers):—R. Lucovich, M.C. (temp. Sec. Lt., Worc. R.), W. F. Evans, D.C.M. (temp. Sec. Lt., S. Staffs. R.), D. Neill (Lt., Forestry Corps, C.E.F.), and to be Hon. Lt., April 1st; W. L. Kingwill, M.C. (Lt., Norf. R.), and to be Hon. Lt., April 9th; J. P. Mackenzie (Sec. Lt., R.F.A.), April 12th; C. T. de Guise (Lt., Quebec R., C.E.F.), and to be Hon. Lt., May 3rd; C. P. M. B. Caillard (Lt., Wilts R., Spec. Res.), and to be Hon. Lt., H. Grieve (Sec. Lt., Lpool. R., T.F.), Aug. 27th; W. U. Tyrrell (Lt., R. Ir. Rif.), and to be Hon. Lt., G. A. F. Riley, M.M. (Lt., E. Ont. R., C.E.F.), and to be Hon. Lt., C. E. Kinton (Lt., Nova Scotia R., C.E.F.), and to be Hon. Lt., D. Bovill (Lt., Manitoba R., C.E.F.), and to be Hon. Lt., H. Douglas (temp. Sec. Lt., York. R.), Aug. 29th; C. T. Mee (Lt., C.F.A., C.E.F.), and to be Hon. Lt., A. G. Pugh (temp. Sec. Lt., Manch. R.), S. M. Fairey (temp. Sec. Lt., Notts and Derby R.), H. J. C. Hartley (Sec. Lt., Lond. R., T.F.), K. Jones (Lt., R. Berks R., T.F.), and to be Hon. Lt., P. Bell, M.C. (Capt., Welsh R., T.F.), and to be Hon. Capt., E. Willis (temp. Sec. Lt., attd. R. Lan. R.), H. G. Pratt (Sec. Lt., Welsh R., Spec. Res.), A. Gladwin (Lt., York and Lan. R., T.F.), and to be Hon. Lt., W. Jones (temp. Sec. Lt., Manch. R.), J. H. Bolam (temp. Sec. Lt., Northd. Fus.), E. O. Rutherford (temp. Sec. Lt., E. York R.), Aug. 30th; C. Walker (Sec. Lt., Notts and Derby R., T.F.), R. R. Hodges (Sec. Lt., S. Staffs. R., T.F.), A. E. Stephenson (Sec. Lt., R.F.A., Spec. Res.), R. W. Lane (temp. Sec. Lt., Hamps. R.), H. E. Allan (temp. Sec. Lt., Tank Corps), W. S. Woolfe (Sec. Lt., R. Berks R., T.F.), R. W. Silk (temp. Sec. Lt., Northd. Fus.), B. S. Sylvester (Sec. Lt., York and Lan. R., T.F.), R. W. Thwaites (Lt., Lovat's Scouts, T.F.), and to be Hon. Lt., Aug. 31st; C. O'N. Daunt (temp. Lt., S. Lan. R.), and to be Hon. Lt., R. G. Harris (Sec. Lt., Linc. R., T.F.), Sept. 5th; F. Smith (temp. Lt., R.E.), and to be Hon. Lt., J. Oliver (Sec. Lt., Lond. R., T.F.), C. R. Leeke (Lt., R.F.A., T.F.), and to be Hon. Lt., G. A. R. Slimming (temp. Lt., A. Cyclist Corps), and to be Hon. Lt., H. V. Alder (temp. Sec. Lt., R. Suss. R.), R. H. Griffiths (temp. Sec. Lt., Welsh R.), A. J. Tremblay (Lt., W. Ontario R., C.E.F.), and to be Hon. Lt., H. C. Ratcliff (temp. Sec. Lt., Yorks R.), C. H. Woolvin (Sec. Lt., Middx. R.), Sept. 7th; A. E. Hart (Sec. Lt., Lond. R., T.F.), W. L. Dixon (temp. Sec. Lt., York and Lan. R.), B. G. Bowen (temp. Sec. Lt., York R.), D. C. S. Williams (Lt., Derby Yeo., T.F.), W. L. Hon. Lt., Sept. 16th; B. W. Smyth-Pigott, M.C. (temp. Lt., Durh. L.I.), and to be Hon. Lt., C. G. Smyth-Pigott (Lt., R. Wilts Yeo., T.F.), and to be Hon. Lt., Sept. 8th; F. E. Dawe (temp. Sec. Lt., Glouc. R.), Sept. 11th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers):—N. R. Lewis, R. G. Fullagar, N. R. McKinlay, Aug. 23rd; S. W. Atkinson, C. W. Blasdale, W. A. Bune, C. E. Clarke, R. A. Clarke, P. A. Savoie, H. McNish, J. M. White, C. H. Abbey, T. Shortland-Jones, A. J. McD. Grimston, M. M. Miln, Sept. 6th; N. Nutton, H. Carding, S. W. Lummis, C. N. Strong, Sept. 10th; A. Trantor, J. A. Oliver, W. F. Marr, J. McCallum, A. Nisbett, E. A. Slater, A. F. Taylor, R. B. Jones, W. MacInnes, Sept. 12th; M. W. Dunn, C. J. H. May, A. B. Gates, H. S. Crees, A. P. Cannon, H. C. Eyre, J. H. Reid Smith, J. J. Nicholls, F. Owen, A. Hesketh, Sept. 13th; D. W. P. Boyd, S. F. Jones, N. Butt, F. M. R. Jones, A. J. Kelly, C. B. Cheetham, H. Lapish, J. Grant, J. J. Snow, A. V. Kidd, A. C. Faulkner, Sept. 14th; J. R. Colquhoun, S. J. Goodfellow, S. R. Johnson, H. Ricketts, Sept. 15th; D. M. Dee, W. A. C. Ballantine, G. B. Boshell, G. T. Bird, S. Meadows, Sept. 16th, R. W. Jones, A. H. Butler, H. C. Peat, D. H. Mansfield, N. W. Davidson, J. E. Motion, C. M. Alchorn, Sept. 17th.

The following prob. Obsr. Officers are granted temp. commns. as Sec. Lts. (Obsr. Officers):—D. Beckingham, L. R. Somerville, F. R. Dunn, R. B. A. Pettite, M. Smith, L. Joslin, J. E. Watkins, Sept. 6th.

Lt. A. S. Hamilton relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lt., Sept. 18th.

Lt. W. A. Golding relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Lt., Sept. 18th.

Lt. T. B. Bradley resigns his commn., and is granted the hon. rank of Lt., Sept. 18th.

Lt. F. C. Coury resigns his commn., Sept. 18th.

The following Sec. Lts. resign their commns., having been found permanently unfit for further instruction as Pilots or Observers:—D. S. Barbour, N. D. Lees, H. A. Rootham, Sept. 18th.

The notification in "Gazette," June 21st, concerning Lt. (temp. Capt.) C. H. Keith is cancelled.

The notification in "Gazette," Sept. 6th, concerning H. G. L. Fletcher is cancelled.

The notification in "Gazette," Aug. 13th, concerning Lt. I. H. McClure is cancelled.

The notification in "Gazette," Sept. 3rd, concerning Lt. (temp. Capt.) G. E. Wildman-Lushington is cancelled.

The initials of Lt. (temp. Capt.) W. D. Gairdner are as now described and not as in "Gazette," Aug. 30th.

The notification in "Gazette," July 26th, page 8901, concerning Sec. Lt. G. F. Davis (E. Kent R.) is cancelled.

The Christian names of Ronald Horace Cross are as now described, and not "Ronald Hibbert" as in "Gazette," Sept. 6th.

The notification in "Gazette," Aug. 23rd, concerning Lt. W. A. Moore (Rif. Brig., Spec. Res.) is cancelled.

The notification in "Gazette," Aug. 27th, concerning P.F.O. Albert Paveley (late R.N.A.S.) is cancelled.

The notification in "Gazette," July 19th, concerning Sec. Lt. J. E. Phelps (late Gen. List, R.F.C., on prob.) is cancelled.

The notification in "Gazette," June 28th, concerning Sec. Lt. J. M. Brown (Sco. Rif., Spec. Res.) is cancelled.

The surname of G. H. Winckworth is as now described, and not as in "Gazette," Aug. 30th.

The notification in "Gazette," Aug. 9th, concerning Morris S. Tench is cancelled.

The surname of Flt. Cadet George Gedge is as now described, and not "Gedige" as in "Gazette," Aug. 6th.

ADMINISTRATIVE BRANCH.—C. E. Campbell (Lt.-Col., R.D.C., T.F.) is granted a temp. commn. as Lt.-Col., July 2nd.

The following Majs. (R.D.C., T.F.) are granted temp. comms. as Majs.:—J. G. A. Baillie, R. D. Anderson, July 2nd.

L. A. Burrows (Maj., Res. of Officers) is granted a temp. commn. as Maj., July 20th.

G. H. C. The Earl of Rocksavage (Capt., Lancers, S.R.) is granted a temp. commn. as Capt., and to be temp. Maj. (without the pay and allowances of that rank) whilst specially empld., May 19th.

Lts. to be temp. Capts. whilst empld. as Capts.:—R. L. Briscoe, W. Halliwell, F. J. Street, April 1st; C. H. J. James, Aug. 1st.

Sec. Lts. to be temp. Capts. whilst empld. as Capts.:—J. Pell, M.C., May 8th; M. Sheriff, D.C.M., Sept. 10th.

The following Capts. (R.D.C., T.F.) are granted temp. commns. as Capts.:—G. C. Toswill, B. M. B. H. Gyll-Murray, R. S. C. de Chaffey, July 2nd.

The following are granted temp. commns. as Lts., and to be temp. Capts. whilst empld. as Capts.:—J. J. Metcalfe (Qrmr. and Hon. Lt., Gen. List, T.F.), May 30th; H. M. Woodhouse (Lt., Notts Yeo.), June 19th.

Sec. Lts. to be temp. Lts. whilst empld. as Lts.:—L. Hawkins, June 16th; J. A. Elliott, June 19th; (Hon. Lt.) T. C. Noble, July 13th; (Hon. Lt.) M. H. Unwin, from (T.), Sept 2nd; (Hon. Lt.) E. Butler, Sept. 6th; L. P. St. V. Nepean, Sept. 8th.

Lts. (A.) to be Lts.:—W. H. Goodbrand, Aug. 13th; A. Watson, Sept. 4th.

Lts. (O.) to be Lts.:—M. Weinburg, Sept. 5th; (Hon. Capt.) E. G. F. Thomson, and to be Hon. Capt., Sept. 14th.

The following Lts. (R.D.C., T.F.) are granted temp. commns. as Lts.:—W. Ricketts, C. F. Newington, E. G. Simpson, H. F. Roberts, W. A. Dewhurst, J. R. M. Tweddell, J. R. Fox, F. Barclay, A. Heatherley, H. H. Bunn, H. R. M. Dodd, July 2nd.

The following are granted temp. commns. as Lts.:—R. R. Tattersall (temp. Lt., attd. Rif. Brig.), July 2nd; N. Hoole (Lt., Lab. Corps), M. Jubb (Capt., W. Rid. R., T.F.), and to be Hon. Capt., Sept. 6th.

Sec. Lts. (T.) to be Sec. Lts.:—A. E. Houghton, July 4th; (Hon. Capt.) G. T. Braggiotti, and to be Hon. Capt., Sept. 6th.

Sec. Lt. T. Moorcroft (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt., June 3rd.

The following Sec. Lts. (R.D.C., T.F.) are granted temp. commns. as Sec. Lts.:—C. Ridsdale, P. C. Ward, July 2nd.

A. Cole is granted a temp. commn. as Sec. Lt., Sept. 10th.

Lt. R. D. Bradshaw relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lt., Sept. 18th.

Sec. Lt. M. E. Rowe resigns his commn., and is granted the hon. rank of Sec. Lt., Sept. 18th.

The following Sec. Lts. resign their commns.:—H. Byatt, H. J. Nicol, Sept. 18th.

The following Sec. Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Sec. Lt.:—R. F. Bruce, J. M. Larose, Sept. 18th.

The notification in "Gazette," Sept. 3rd, concerning Sec. Lt. L. P. J. Dion is cancelled.

TECHNICAL BRANCH.—Capts. to be temp. Majs. while empld. as Majs.:—C. H. Morgan, May 20th; R. G. Booth, July 2nd; J. O. Ruscoe, Aug. 24th.

Lts. to be temp. Capts. whilst empld. as Capts.:—E. E. Jolly, A. E. Lindon, L. O. Spain, (Hon. Capt.) A. R. Thomson, M.C., Aug. 2nd; W. H. Farnell, Sept. 4th.

Sec. Lts. (temp. Lts.) to be temp. Capts. whilst empld. as Capts.:—J. M. Pinkerton, Aug. 20th; A. H. Edwards, Aug. 30th.

Lt. (temp. Capt.) L. T. Beddow to be Capt., from (Ad.), July 18th.

L. Y. Stott (Lt., R.N.V.R.) is granted a temp. commn. as Capt., July 26th.

Sec. Lts. (Hon. Lts.) to be temp. Lts. whilst empld. as Lts.:—D. McK. Finlayson, L. A. Sturrock, R. P. Graham, June 16th; F. Cade, C. J. Poole, Sept. 8th.

Sec. Lt. F. C. Lyne to be temp. Lt. whilst empld. as Lt., Sept. 1st.

Sec. Lt. (temp. Lt.) L. E. Carter retains his temp. rank whilst empld. as Lt., from (Ad.), June 15th.

Lt. B. B. Lemon to be Lt., from (A.), Sept. 2nd.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts.:—J. C. Green, May 30th; G. D. Croskery, J. Keyte, July 3rd.

Sec. Lts. (Ad.) to be Sec. Lts.:—G. Mitchell, W. E. E. Stephens, C. Capel, L. T. Holmes, J. C. Sword, G. M. Washbourne, July 3rd; J. Parsons, Aug. 9th; G. J. C. W. Fitzwilliam, Aug. 12th; S. C. Addison, Aug. 22nd.

The following are granted temp. commns. as Sec. Lts.:—C. C. N. Wade (Capt., Yorks L.I., T.F.), and to be Hon. Capt., May 30th; E. Tanner (Lt., Manch. R., Spec. Res.), and to be Hon. Lt., July 1st.

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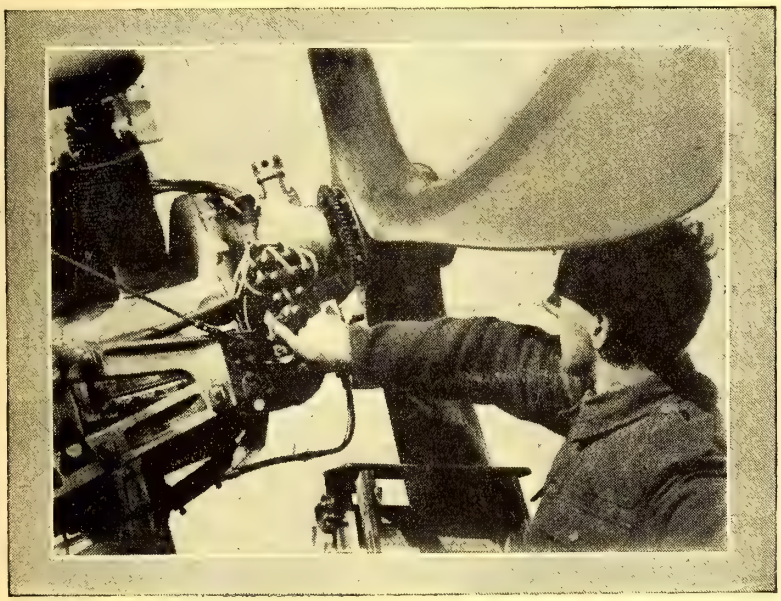
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Lt. L. C. Coward to be Sec. Lt., and to be Hon. Lt., from (Obsr. Officer), June 20th.

Lt. H. K. M. Hebert resigns his commn., Sept. 18th.

Sec. Lt. (Hon. Maj.) W. T. W. Scott (Maj., Rif. Brig., T.F.) relinquishes his commn. on account of ill-health, Sept. 18th.

The surname of Sec. Lt. (temp. Lt.) E. C. Thomson is as now described, and not as in "Gazette," Aug. 20th.

MEMORANDA.—Lt.-Col. W. Briggs to be temp. Col. while specially empld., April 1st.

To be temp. Capts. while holding spec. appts. at Ministry of Munitions:—Lt. P. G. Robinson, Sec. Lt. H. A. Maynard, July 31st.

Lt. (Hon. Capt.) R. H. Warden relinquishes his commn. on ceasing to be empld., Sept. 9th.

WAR OFFICE, Sept. 20th.

REGULAR FORCES.—R.F.C.—MIL. WING.—SCHOOLS OF INSTRN.—SCHOOLS OF MIL. AERONAUTICS.—Comdt. (graded as a Dépôt Comdr.).—Capt. (temp. Maj.) J. W. Cruikshank, Durh. L.I., Spec. Res., a Park Comdr., and to be temp. Lt. Col. whilst so empld., Aug. 31st, 1917.

AIR MINISTRY, Sept. 20th.

R.A.F.—The following temp. appts. are made at the Air Ministry:—Director.—Lt.-Col. R. S. Roy, and to be temp. Col. while so empld., vice Lt.-Col. H. S. Ebben, O.B.E., July 1st.

Staff Officer, 3rd Cl.—Capt. W. P. M. Newman, vice Sec. Lt. (temp. Capt.) H. M. Piper, who relinquishes his temp. rank, Aug. 16th.

Staff Officer, 4th Cl.—Lt. J. E. Rosselli, Sept. 21st.

The following temp appts. are made:—Staff Officer, 1st Cl.—Maj. S. R. Lowcock, and to be temp. Lt.-Col. while so empld., July 4th (Air); Lt.-Col. C. H. Meares, June 24th.

Staff Officers, 2nd Cl.—And to be temp. Majs. while so empld. if not already holding that rank:—Capt M. Bartlett, Capt. A. Price-Reed, Maj. G. M. T. Rees, Capt. H. Welch, July 4th; (P.) Capt. (temp. Maj.) J. H. S. Annesley, Aug. 16th.

The notification in "Gazette" of Sept. 13th concerning Maj. A. Corbett-Wilson is cancelled.

Staff Officers, 3rd Cl.—And to be temp. Capts. while so empld.:—Lt. R. H. Spencer, June 5th; Capt. P. M. Davson, Lt. F. Edwards, Lt. W. B. Garrett, Capt. J. D. Greenwood, Capt. E. H. Haworth, Capt. A. J. Osborn, Lt. (temp. Capt.) E. S. Pearse, Capt. L. S. M. Pike, Capt. C. A. Slater, Capt. A. H. White, July 4th; (P.) Lt. C. A. Mercer, Aug. 16th.

Capt. T. C. Macaulay, M.C., relinquishes his appt. as S.O., Aug. 31st.

Staff Officer, 4th Cl.—Lt. A. C. Tapster, July 4th.

Staff Officer, 4th Cl. (2nd Gr.).—Lt. G. Verden, Aug. 21st.

Staff Lt., 2nd Cl.—(P.) Sec. Lt. R. J. Whitley, and to be temp. Lt. whilst so empld., July 11th.

Staff Lt., 3rd Cl.—(P.) Lt. J. S. Stooke-Vaughan, Aug. 16th.

FLYING BRANCH.—Lts. to be temp. Capts. whilst empld as Capts. (A.):—(Hon. Capt.) H. H. Bagnall, June 17th; W. Algie, D.S.O., L. B. Blaxland, G. Clapham, M. H. Coote, J. Day, M.C., P. K. Hobson, M.C., K. B. Lloyd, K. Loughlin, W. B. Thomson, E. Thornton, Sept. 1st; F. H. Baguley, Sept. 3rd; W. G. Stevenson, Sept. 4th; G. W. Dowling, E. Swale, Sept. 5th; R. B. Bannerman, Sept. 8th; L. R. Shoebottom, D.F.C., Sept. 9th; H. F. Flowers, C. F. Galbraith, Sept. 14th.

Lt. H. B. Hill to be Lt. (A.), from Obsr. Officer, Aug. 24th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A.):—W. G. McCaig, Aug. 20th; G. D. L. Snyman, Aug. 24th; R. C. Teen, A. H. B. Stace, T. H. Delany, Aug. 25th; H. V. Bell, J. Erskine, W. H. Whale, A. Birrell, Aug 26th; R. Logan, P. L. Sant, D. A. Collin, J. Cockburn, F. K. Langton, Aug. 28th; T. P. Wheatley, J. Hart, Aug. 29th; M. Saynor, J. M. Wilkie, C. S. Harrison, A. C. James, R. H. Regan, F. H. Lane, S. M. Linkletter, F. J. Letzer, P. F. T. Luckham, J. N. Marchbank, Aug. 30th.

The following are granted temp. commns. as Sec. Lts. (A.):—A. Schofield (temp. Sec. Lt., D. of Corn. L.I.), Aug. 26th; C. Davenport (temp. Lt., York. R.), and to be Hon. Lt.; H. J. Ashley (Sec. Lt., S. Lan. R., Spec. Res.); R. T. Pearson, M.C. (Capt., A.S.C.), and to be Hon. Capt., Aug. 27th; A. H. Derby (temp. Sec. Lt., Middx. R.), Aug. 28th; J. V. R. Jacob (Lt., R.G.A., T.F.) and to be Hon. Lt.; A. E. Titchmarsh (Sec. Lt., Notts and Derby R., T.F.); C. Campbell (Sec. Lt., Gord. Highrs., T.F.); J. S. Oliphant (Lt., R.G.A., T.F.), and to be Hon. Lt.; F. E. Turner (temp. Sec. Lt., W. York. R.); J. E. White (Sec. Lt., Essex R., T.F.), Aug. 29th; J. F. Wilby (temp. Sec. Lt., E. York. R.); G. H. Collis (temp. Sec. Lt., York and Lanc. R.); A. Glen (Sec. Lt., R.G.A., Spec Res.); W. R. Steed (temp. Lt., A.S.C.), and to be Hon. Lt.; S. C. Savill (Capt., W. York R., T.F.), and to be Hon. Capt., Aug. 30th; N. P. B. Giddens (temp. Sec. Lt., attd. Worc. R.), Sept. 1st.

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (A.):—L. J. V. Bates, Aug. 25th; K. W. Cumming, Aug. 27th; C. C. H. Grosse, A. A. Caney, Aug. 28th; H. S. MacNeice, Aug. 29th; J. Greatorex, J. D. Bush, G. T. Whitcomb, P. W. Lynch-Blosse, Aug. 30th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A.):—C. A. Hall, E. Anderson, July 21st; L. W. Luce, J. M. May, Aug. 3rd; J. G. Leckenby, Aug. 19th; F. R. L. Allan, Aug. 30th; S. Green, Aug. 31st; P. S. Parkin, Sept. 4th; R. Cohen, Sept. 5th; F. A. Taylor, G. R. Edwards, Sept. 6th; P. A. King, R. S. Farmer, H. Hillier, F. C. Randall, J. R. Sleight, Sept. 7th; T. A. Lawrence, Sept. 9th.

Maj. G. A. E. Chapman to be Sec. Lt. (A.), and to be Hon. Maj. from (Ad.), Aug. 29th.

The following Flt. Cadets are granted temp. commns. to Sec. Lts. (A. and S.):—H. J. Smith, June 15th; A. L. R. Aspeling, July 22nd; W. A. McLeod, July 23rd; K. S. Stefanus, Aug. 10th; K. De W. Cleveland, C. F. Lamont, Aug 14th; C. W. Joughin, Aug. 19th; N. H. Waite, C. F. C. Massey, W. F. S. Deeks, R. T. Watkins, H. G. Souchon, Aug. 23rd; W. Mottershead, Aug. 30th; W. E. Tunks, Sept. 3rd; P. R. Hurley, Sept. 8th.

The following Flt. Cadets are granted temp commns. as Sec. Lts. (Dir.):—H. H. Mortiboy, G. Somerville, H. C. Crowder, G. Moore, W. J. Jones, H. S. B. Aston, P. S. White, F. Coates, July 17th.

T. R. Green is granted a temp. commn. as Sec. Lt. (K.B.), Sept. 16th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers):—W. Gibson, W. G. Gadd, Sept. 9th; A. E. Porter, Sept. 10th; W. Haviland, D. M. Tomlinson, J. H. Pringle, C. J. Thomas, H. T. Ross, I. N. Rees, Sept. 13th; A. McL. Shields, J. E. Raistrick, Sept. 19th.

The following Lts. relinquish their commns. on ceasing to be empld.:—B. Henegan (Lt., A. and S. Highrs.), Aug. 29th; A. Trewheler (Lt., R. Lanc. R.), Sept. 3rd.

Lt. W. A. P. Sprott (Lt., Bord. R.) relinquishes his commn. on account of ill-health contracted on active service, Sept. 21st.

The following Lts. relinquish their commns. on account of ill-health contracted on active service and are granted the hon. rank of Lt.:—M. C. Mead, P. T. Newling, Sept. 21st.

Lt. W. M. Clapperton relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Lt., Sept. 21st.

The following Sec. Lts. resign their commns., having been found permanently unfit for further instruction as Pilots or Obsrs.:—J. Magill, J. J. Sullivan, J. H. Stewart, Sept. 21st.

The date of relinquishment of Sec. Lt. C. P. Todd is Aug. 2nd, and not as in "Gazette" Aug. 27th.

The initials of Sec. Lt. F. E. L. Elliott (Camb. R., T.F.) are as now described, and not as in "Gazette" June 7th.

The surname of Sec. Lt. Harold Cooper is as now described, and not as in "Gazette," Sept. 10th.

The notifications in "Gazette," Sept. 6th regarding the following are cancelled:—Lt. C. F. Kelsch, Sec. Lt. J. M. Holloway.

ADMINISTRATIVE BRANCH.—Capts. to be temp. Majs. while empld. as Majs.:—C. J. Page, July 20th; (Hon. Maj.) A. N. Stuart, Sept. 1st.

To be temp. Majs while empld as Majs.:—Sec. Lt. (Hon. Capt.) A. J. Dawes, from (T.), April 1st; Sec. Lt. (Hon. Lt.) C. Harvey, Lt. (temp. Capt.) J. S. Holloway, Sec. Lt. (temp. Lt.) C. A. E. Lloyd, July 29th.

Sec. Lts. to be temp. Capts. while empld as Capts.:—G. M. Bell from (T.), (Hon. Lt.) T. M. Wheeler, April 1st.

The following are granted temp. commns. as Lts.:—W. W. Legg (Lt., R.F.A., S.R.), July 7th; J. D. Lyons (Capt., Res. of Officers), and to be Hon. Capt., Sept. 7th; J. S. Flanagan (Lt. and Qrmr., Spec. List), G. W. Nelson (Lt., Gord. Highrs.), Sept 9th; Sec. Lt. H. E. Storey to be temp. Lt. whilst empld. as Lt., April 9th.

Lts. (A.) to be Lts.:—F. S. Potts, Sept. 9th; V. Phillips, Sept. 14th.

Lt. R. V. Tivy to be Lt., from (O.), Sept 9th.

H. Castle (Sec. Lt., Lpool R.) is granted a temp. commn. as Sec. Lt., and to be temp. Lt. whilst empld. as Lt., July 17th.

The following are granted temp. commns. as Sec. Lts.:—J. S. Betterton, Aug. 21st; W. C. Hanney, Aug. 29th; W. G. Illingworth, E. E. Blake, T. R. Davies, F. A. Pritchard, W. C. Van Eeden, A. F. Rees, W. Andrews, A. H. Warriner, W. C. Brown, R. E. Haddon, W. C. Cranfield, H. W. F. Long, J. S. Begg, H. J. De Waal, W. H. Hitt, W. Vaughan, J. O. Miles, C. W. Grey, G. G. Kirby, T. Mattocks, R. M. Balston, C. Jones, R. O. Griffith, Sept. 14th; J. H. Tanton, J. Dale, J. H. Hankins, I. A. N. Beadle, R. F. G. Macmaster, Sept. 19th.

Capt. R. H. Catleugh relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Capt., Sept. 21st.

Lt. E. A. Salt relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lt., Sept. 21st.

Lt. D. S. Broadhurst relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lt. Sept. 21st.

Sec. Lt. H. F. Emerton relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., Sept. 21st.

The following Sec. Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Sec. Lt.:—P. Messenger, T. J. O'Sullivan, R. I. Whetman, Sept. 21st.

The following Sec. Lts. resign their commns.:—C. H. Malone, C. H. Wison, Sept. 21st.

The notification in "Gazette," June 25th, concerning Sec. Lt. S. L. Boothroyd is cancelled.

TECHNICAL BRANCH.—R. R. Seward (temp. Maj., R.E.) is granted a temp. commn. as Maj., May 22nd.

Lt. H. E. Smith (R.N.R.) is granted a temporary commn as Capt., and to be temp. Maj. whilst so empld., Sept. 11th.

Lts. (O.) to be Lts.:—S. S. Tyler, April 1st; G. D. Gillie, M.C., Aug. 28th.

Lt. (temp. Capt.) T. L. Edwards relinquishes his temp. rank and reverts to Lt. on relinquishing the appt. of S.O., Sept. 12th.

Sec. Lt. H. P. G. Leigh to be temp. Lt. whilst empld. as Lt., Aug. 20th.

E. O. Brown is granted a temp. commn. as Sec. Lt., Sept. 16th.

Lt. S. R. Brokenska relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lt., Sept. 21st.

Sec. Lt. A. W. Thompson relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., Sept. 21st.

MEDICAL BRANCH.—S. W. Fisher is granted a temp. commn. as Capt., Sept. 17th.

MEMORANDA.—H. Welch (Capt. Notts and Derby R.) is granted a temp. commn. as Capt., April 1st.

Lt.-Col. (temp. Col.) H. S. Ebben, O.B.E., relinquishes the temp. rank of Col., July 1st.

The date of appointment of Lt. (temp. Maj.) A. T. A. Dobson is June 27th, and not as in "Gazette," Sept. 19th.

Sec. Lt. R. S. Griffiths to take rank and prec. as if his appointment as Sec. Lt. bore date June 14th.

FROM THE COURT CIRCULAR.

WINDSOR CASTLE, Sept. 18th.

His Majesty held an Investiture in the Quadrangle of Buckingham Palace.

The following Officers were severally introduced into the presence of His Majesty, when the King conferred decorations as follows:—

THE MILITARY CROSS.—Lt.-Col. Howard Walker, R.A.F.; Capt. Jack Allport, R.A.F.; Capt. Orlando Bridgeman, R.A.F.; Capt. John Firth, R.A.F.; Lt. Harry Collier, R.A.F.; Lt. Arthur Hopkins, R.A.F.; Sec. Lt. Richard Foxcroft, R.A.F.

THE ALBERT MEDAL.—Capt. RICHARD BUSWELL, Ches. Yeo., attd. R.A.F.

Capt. Buswell while flying saw another machine sideslip to the ground and burst into flames. He flew to the spot and landed; and seeing that the pilot, who was enveloped in flames, was still living, he dashed into the fire and endeavoured to rescue him. Several attempts had already been made to reach the pilot, but owing to the very intense heat they were unsuccessful. Capt. Buswell, however, managed to get hold of the pilot's clothes, which, being in flames, came away in his hand. He then procured a belt and succeeded in extricating the pilot, but was too late to save his life.

BUCKINGHAM PALACE, Sept. 23rd.

Maj.-Gen. Sir Godfrey Paine (Inspector-General, Royal Air Force) had the honour of being received by The King this morning.

OFFICIAL COMMUNIQUES.

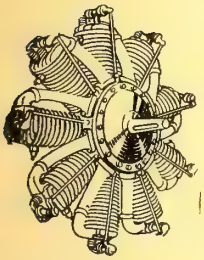
NAVAL.

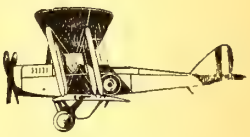
ADMIRALTY COMMUNIQUÉS.

SEPT. 17th.—Generally unfavourable weather during the period Sept. 8th-15th has restricted operations by Royal Air Force contingents working with the Navy.

Several successful raids have been undertaken, when the conditions permitted, and over 9½ tons of bombs have been dropped on Bruges Docks, and enemy aerodromes, with good results. Eleven bombs were

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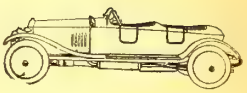




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observed to burst on the quays at Bruges—where a fire was started—and hostile destroyers were attacked off Zeebrugge Mole.

Uytkerke Aerodrome was attacked from a low altitude. One hangar was seen to burst into flames; a hut was demolished and fires were started among workshops.

The activity of enemy aircraft has been below normal, three hostile machines being destroyed, and two driven down out of control.

Two of our machines have failed to return, but are believed to have landed in a neutral country.

Anti-submarine and convoy patrols have been maintained in Home waters, submarines being sighted and attacked and enemy mines located and destroyed.

SEPT. 18th.—During the last 48 hours a formation of five enemy seaplanes, approaching the East Coast, was met and engaged by two seaplanes and two aeroplanes. One enemy machine was destroyed, the remainder retiring eastward.

During the last 48 hours Royal Air Force contingents working with the Navy dropped 13 tons of bombs on Bruges Docks and Maria Alter aerodrome.

Eleven enemy machines and a kite balloon were destroyed and seven driven down out of control.

Four of our machines are missing.

SEPT. 23rd.—During the period September 17th-21st, Royal Air Force contingents working with the Navy have been unable to carry out night operations, owing to unfavourable weather. Several day-bombing raids have taken place, and Bruges docks have been attacked on four occasions, eight tons of bombs being dropped. Five hostile aerodromes were also bombed, with excellent results, subsequently confirmed by photographic reconnaissance.

In engagements with enemy aircraft, six enemy machines have been destroyed and five driven down out of control.

Three of our machines are missing.

A hostile balloon was also shot down, and, falling in flames on the balloon camp, set fire to three hangars, all of which were burnt out.

Information has been received that Constantinople was bombed on the nights of September 20th and 21st. Bombs burst on Haidar Pasha Station, buildings north of the Admiralty, and in Stambul. A seaplane hangar at Nagara is also believed to have been damaged. The operations were carried out in co-operation with Greek naval aircraft, and many thousands of propaganda leaflets were dropped in Stambul.

One Greek and one British machine failed to return.

MILITARY.

G.H.Q. COMMUNIQUÉS.

SEPT. 17th, 8.20 p.m.—There was great aerial activity all along the British front on Sept. 16th, and our machines were busily engaged in every department of their work.

Photographic reconnaissances, both of forward and distant areas, were carried out with great completeness, in spite of strong opposition, and the number of aerial photographs taken exceeds any recorded total for one day. Observation of our artillery fire was successfully performed both by aeroplanes and balloons. Much damage was reported in hostile battery positions, and many fires and explosions were caused.

Nearly 24 tons of bombs were dropped by day and 15 tons on the following night on aerodromes used by the enemy's night-flying aeroplanes and on railheads and dumps.

Fighting was intense all along the front throughout the day, combats taking place a considerable distance east of the lines.

Forty-five hostile machines were brought down by our aviators. Of these, seven were brought down in one fight by one of our squadrons. Twenty other German machines were driven down out of control. In addition, one hostile aeroplane was shot down by our anti-aircraft guns. One hostile balloon was destroyed.

Sixteen of our machines are missing.

SEPT. 18th, 8.15 p.m.—After their heavy losses on the previous day, enemy aircraft were less active on Sept. 17th.

The weather on the British front was fine, with a strong wind. Our machines were at work all day, carrying out reconnaissance and photography far beyond the German line, observing and reporting the effect of our artillery fire, and bombing enemy aerodromes, dumps, and other selected targets.

Eleven hostile machines were destroyed, and five others driven down out of control.

Ten of our machines are missing.

At night we heavily bombed three German aerodromes, where squadrons working in the battle area are located.

Three large hostile night-bombing machines which came over our lines were detected by our searchlights, and attacked from the air and brought down.

One of our night-flying aeroplanes is missing.

The total weight of bombs dropped by us during the 24 hours is 29¼ tons.

SEPT. 19th, 8.5 p.m.—Enemy aircraft activity was slight on Sept. 18th.

Four hostile machines were brought down, and three more driven down out of control.

Four of our machines are missing.

Our aeroplanes kept in touch with our advancing troops, and assisted the attack by bombing and machine-gun fire, as well as by reporting many targets to our artillery. (Operations south of Gouzeaucourt.) During the 24 hours we dropped 16 tons of bombs.

On Sept. 16th a hostile aeroplane was brought down by one of our anti-aircraft batteries, and on the night of the 17th another enemy machine was shot down by machine-gun fire from the ground. These two German machines are in addition to those already announced as destroyed on the above dates.

SEPT. 20th, 7.47 p.m.—Clouds and strong wind interfered with work in the air on Sept. 19th, and artillery observation was carried on with difficulty.

Our squadrons working on the Third and Fourth Army fronts kept in close touch with our troops, reported the positions of enemy batteries, and delivered ammunition to our machine-gunners in the forward area. Five and a half tons of bombs were dropped by us on various targets.

Two hostile aeroplanes were brought down in air fighting and one was driven down out of control. Another hostile machine was shot down on the evening of the 18th inst., by anti-aircraft fire.

None of our machines is missing.

No flying was possible at night.

SEPT. 21st, 7.50 p.m.—On Sept. 20th, in spite of low clouds and frequent showers, our aeroplanes carried out useful work in all departments of their activity. Sixteen enemy machines were destroyed in air fighting and three driven down out of control.

Eleven of ours are missing.

At night a German two-engined bombing machine was encountered and shot down. All our night-flying aeroplanes returned safely. Twenty-six and a half tons of bombs were dropped during the 24 hours. During the last three days our anti-aircraft fire has brought down two hostile machines in addition to those already announced.

SEPT. 22nd, 7.45 p.m.—Cloudy and windy weather continued to prevail on the British front on Sept. 21st. In spite of these conditions, flying operations, including a number of reconnaissances and photographic flights, as well as many artillery patrols, were carried on without intermission by our squadrons.

Seven enemy machines were destroyed during the day and three others driven down out of control. Eight of our machines are missing.

During the night of Sept. 21st-22nd three enemy bombing machines, which had been detected by our searchlights, were engaged from the air and brought down.

All our own night-flying aeroplanes returned safely.

The weight of bombs dropped during these 24 hours amounted to 16 tons.

SEPT. 23rd, 7.35 p.m.—The work of the Air Force was carried on throughout September 22nd in overcast and showery weather, but a good deal of artillery observation was accomplished, as well as a number of useful reconnaissances. Our bombing machines dropped 11 tons during the day.

Eight enemy aeroplanes were destroyed; four of our own are missing.

On the following night, in spite of very severe weather, one of our night-flying squadrons successfully attacked an enemy aerodrome near Valenciennes, dropping over four tons of bombs and returning without loss.

WAR OFFICE COMMUNIQUÉS.

The G.O.C. in Russia reports:—

SEPT. 20th.—ARCHANGEL FRONT.—On Sept. 15th an enemy aeroplane that had attempted to bomb the Allied lines was brought down by gun fire. The observer and pilot escaped, but the machine, which fell in front of the Allied outposts, was salved.

The G.O.C. in Macedonia reports:—

SEPT. 20th.—On Sept. 18th four of our scouts, engaging fourteen enemy machines, crashed two of them. One of our machines is missing.

[This refers to the British-Greek advance West and East of Lake Doiran.]

SEPT. 22nd.—The G.O.C. in Palestine reports:—

By 8.0 p.m. on Sept. 20th the enemy resistance had collapsed everywhere, save on the Turkish left in the Jordan Valley.

Several days must elapse before accurate figures of captures can be given, but already over 8,000 prisoners, 100 guns, large quantities of both horse and mechanical transport, four aeroplanes, many locomotives and much rolling stock, have been counted.

Very severe losses have been inflicted on the masses of Turkish troops, retreating by difficult roads, by our air services.

A German aeroplane, later ascertained to have been carrying mails, landed in the midst of our troops at Afuleh the pilot, who believed the place still to be in Turkish hands, destroying machine and contents before he could be secured.

SEPT. 22nd.—The G.O.C. in Italy reports:—

Since my last report 13 enemy aircraft have been destroyed without loss to ourselves.

SEPT. 23rd.—The G.O.C. in Macedonia reports:—

The enemy has evacuated his whole line from Doiran to west of the Vardar. His troops and transport are crowding along the road northwards, heavily bombed and machine-gunned by our R.A.F.

AIR FORCE.

AIR MINISTRY COMMUNIQUÉS.

The following dispatches have been received from the Headquarters of the R.A.F., Independent Force, in France:—

SEPT. 17th.—On the afternoon of the 16th our squadrons made two separate attacks on the aeroplane works and chemical factory at Mannheim with excellent results. The enemy attacked our machines over the objective.

Three of our machines are missing.

A German home defence aerodrome at Habenau was attacked by a squadron, and bursts were observed on and near hangars. One hangar was seen in flames.

All our machines returned.

On the night 16th-17th our machines attacked three hostile aerodromes with bombs and machine-gun fire. Good results were obtained.

The railways at Metz-Sablon and Trèves were very heavily attacked, and three fires were started at Metz-Sablon. Bombs were dropped all round Trèves station.

The station at Frankfurt was also heavily attacked, and bombs were dropped with good effect.

The night at first was calm, but later high winds got up. At present, seven of our machines have not been located.

Sixty tons of bombs have been dropped in the last three days.

SEPT. 21st.—During the night of Sept. 20th-21st we dropped 17 tons of bombs on various objectives. The Lanz Works at Mannheim and the wharves and factories west of Karlsruhe were attacked with success. At Karlsruhe a large fire broke out, and good bursts were observed at Mannheim. Blast furnaces at the Burbach Works were bombed. Attacks were also made on the aerodromes at Boulay, Frescaty, and Morhange. Many direct hits were observed on hangars, and fires broke out at Frescaty and Morhange. One hostile machine was shot down.

One of our machines has not returned.

SEPT. 22nd.—Total weight of bombs dropped on the night of the 20th-21st inst. was 22½ tons and not 17 tons as previously reported.

On the night of the 21st-22nd, four hostile aerodromes were attacked with bombs and machine-gun fire. The Blast Furnaces at Hagendingen and Rombach were attacked and hit. Total weight of bombs dropped, 15¾ tons.

All our machines returned.

THE CASUALTY LIST.

MILITARY.

Reported Sept. 18th.

CANADIAN FORCES.—WOUNDED.—Riley, Lt. G. A. F., M.M., E. Ont. R., attd. R.A.F.

MISSING.—Jonsson, Lt. H., M.C., B.C.R., attd. R.A.F.; Kinton, Lt. C. E., N.S. R., attd. R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONER IN GERMAN HANDS.—Cyr, Lt. A. J., Can. For. Corps, attd. R.A.F.

Reported Sept. 21st.

NEWFOUNDLAND CONTINGENT.—MISSING.—Sellars, Lt. F. M., R. Newf. Regt., attd. R.A.F.

Reported Sept. 23rd.

CANADIAN FORCES.—PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Jonsson, Lt. H., M.C. B.C.R., attd. R.A.F.



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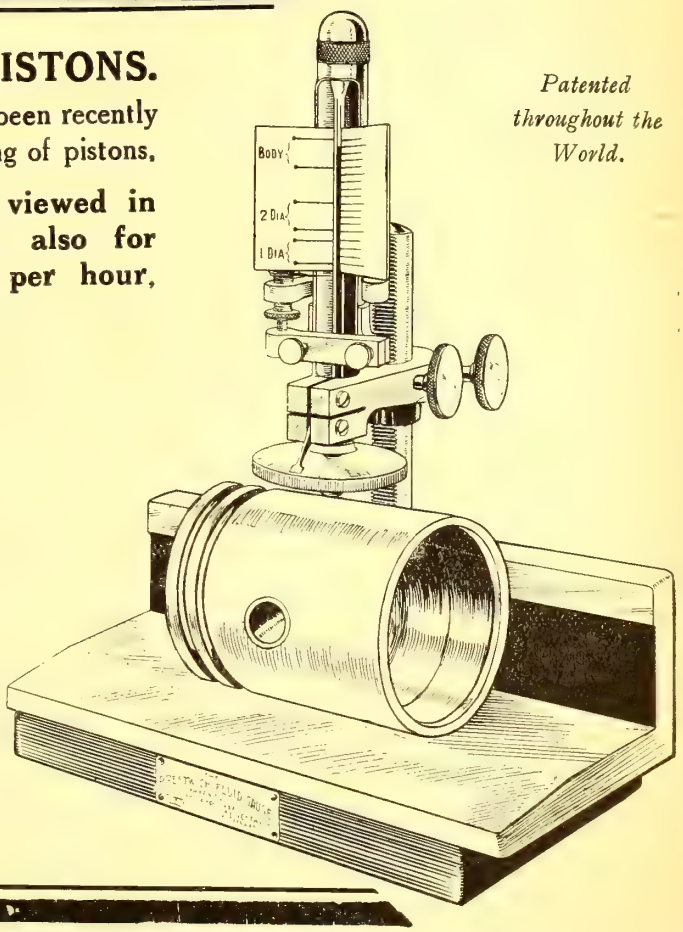
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Reported Sept. 24th.

PREVIOUSLY REPORTED MISSING, NOW REPORTED DIED OF WOUNDS AS PRISONER IN GERMAN HANDS.—Maasdrop, Lt. C. R., R.A.F.

* * *

CASUALTIES AMONG WT. OS., N.C.OS., AND MEN.
THE DATES ARE THOSE OF THE OFFICIAL LIST.

PREVIOUSLY MISSING, NOW REPORTED BY THE GERMAN GOVERNMENT
KILLED OR DIED OF WOUNDS

SEPT. 14th.—R.F.C.—Samways 14262 W. (Taunton).

AUSTRALIAN IMPERIAL FORCE.—WOUNDED.—SEPT. 10th.—A.F.C.—Harrower 553 A.

The following man, who was a prisoner of war in Germany, has arrived in Switzerland for internment:—

SEPT. 11th.—R.F.C.—Organ 4530 W.

The following man who was a prisoner of war in Germany, has arrived in England:—

SEPT. 12th.—R.F.C.—Loughlin 39972 J. W.

AIR FORCE.

Reported Sept. 19th.

KILLED.—Bullock, Sec. Lt. R. H., R.A.F.
Hofmeister, Sec. Lt. A. W., R.A.F.
Hopkinson, Col. B., R.A.F.
Hummerstone, Lt. L. G., Lond. R., I.F., and R.A.F.
Lygo, Lt. F. A., R.A.F.
Page, Capt. L. S. M., Royal E. Kent Yeo., attd. R.A.F.
Tanner, Capt. J. C., R.A.F.
Taylor, Capt. A. D., R.A.F.

DIED OF WOUNDS.—Baldwin, Sec Lt. W. E., Manch. R and R.A.F.
Neilson, Sec. Lt. A. A., R.A.F.

DROWNED.—Fletcher, Sec. Lt. E. C., R.A.F.

WOUNDED.—Barrington, Lt. E. L., M.C., R.A.F.; Clayson, Sec. Lt. P. A., R.A.F.; Dobing, Sec. Lt. H., R.A.F.; Dykes, Capt. G. H., Lanc. Fus. and R.A.F.; Greenaway, Sec Lt. W. G., M.C., R. Ir Fus. and R.A.F.; Lyon-Hall, Sec. Lt. E. H., R.A.F.; King, Lt. A. H. E., R.A.F.; McKinnie, Sec Lt. H. T., R.A.F.; Miller, Lt. W. N., Northd. Fus. and R.A.F.; Scott, Capt. G. J., R.F.A., T.F., and R.A.F.; Schofield, Sec. Lt. J N., R.A.F.; Sifton, Lt. T. G., R.A.F.; Snyder, Lt. V. G., R.A.F.; Trundle, Sec. Lt. G. M., R.A.F.

MISSING.—Beesley, Sec. Lt. R., R.A.F.; Boyle, Sec. Lt. J. C., R.A.F.; Eaton, Sec. Lt. F. C. B., R.A.F.; Fellowes, Lt. H. V., R.A.F.; Ferguson, Lt. F. W., R.A.F.; Flynn, Capt. H. L. W., R.A.F.; Forman, Capt. J. H., R.A.F.; Gammell, Lt. B. E., R.A.F.; Gilbertson, Lt. D. H. S., R.A.F.; Gower, Lt. J. L., R.A.F.; Hall, Sec. Lt. W. E., R.A.F.; Hogg, Lt. W G., R.A.F.; Hughes, Sec. Lt. R. D., R.A.F.; Killick, Sec. Lt. C. H. P., R.A.F.; McPhee, Lt. R., R.A.F.; Miller, Sec. Lt. A. M., R.A.F.; Oliver, Sec Lt. T. K. G., R.A.F.; Pacey, Sec. Lt. F. C., R.A.F.; Penrose, Sec. Lt. K., R.A.F.; Player, Sec. Lt. F., R.A.F.; Spilhaus, Lt. J. A., R.A.F.; Sproule, Lt. E. R. L., R.A.F.; Stahl, Sec Lt. A. M., R.A.F.; Stock, Sec. Lt. A. E., R.A.F.; Swayze, Lt. W. K., R.A.F.; Vickers, Sec. Lt. A., R.A.F.; Washington, Sec. Lt. W. F., R.A.F

CADETS KILLED.—Langbeck, H.
McHenry, C. F.
Phillips, C. H.
Roe, F.
Sneddon, F. E. K.
Weaver, E. J.

Reported Sept. 20th.

KILLED.—Bell, Sec. Lt. O., R.A.F
Box, Lt. G. H., D.C.F., R.A.F.
Boyd, Lt. H., R.A.F
Houston, Sec. Lt. W. D., R.A.F.
Inches, Lt. R. K., R.A.F.
Lee, Sec. Lt. J. A., R.A.F.
Lyne, Lt. E., Junr., R.A.F.
Reid, Sec. Lt. D. S., R.A.F.
Window, Sec. Lt. K. P., R.A.F.

DIED OF WOUNDS.—Carter, Maj. A. R., R.G.A., attd. R.A.F.
Hilborn, Capt. W. C., R.A.F.

WOUNDED.—Aldred, Sec. Lt. W. B., R.A.F.; Anderson, Lt. G., R.A.F.; Collins, Lt. A. V., K.L.R. and R.A.F.; Fair, Sec. Lt. V. A., K.R. Rif. C. and R.A.F.; Harrington, Sec. Lt. J., R.A.F.; Lawson, Lt. A. F. A., R.W. Fus. and R.A.F.; Lovett, Sec Lt. G., R.A.F.; Lowthian, Sec. Lt. L. I., R.A.F.; McPhail, Sec. Lt. J. W. R., R.A.F.; Nattrass, Sec. Lt. H., R.A.F.; Pryke, Sec. Lt. A. G., R. Berks R. and R.A.F.; Roberts, Lt. C., R.A.F.; Rushforth, Capt H. P., R.A.F.; Talbot, Lt. J., R.A.F.; Tearle, Sec. Lt. L. G., R.A.F.

MISSING.—Bateman, Lt. E. C., R.A.F.; Bugg, Sec. Lt. E. G., R.A.F.; Coleman, Sec. Lt. C. M., R.A.F.; Doyle, Capt. J. E., R.A.F.; Good, Lt. H. B., R.A.F.; Harley, Lt. V., R.A.F.; Holland, Lt. E. V., R.A.F.; Hiscox, Sec. Lt. A. H., R.A.F.; Howarth, Capt. N., R.A.F.; McGill, Lt. J. A., R.A.F.; Mellor, Lt. D. J. T., R.A.F.; Platt, Lt. A., R.A.F.; Seymour, Sec. Lt. C. B., R.A.F.; Thatcher, Sec. Lt. A. R., R.A.F.; Thomson, Sec. Lt. S. A., R.A.F.; Underwood, Sec. Lt. E. N., R.A.F.; Walker, Sec. Lt. J. C., R.A.F.; Wells, Capt. G. A., R.A.F.

CADETS KILLED.—Reid, C. D.
Ryan, H. H. W.
Spooner, A. B.
Tinker, A.
Willis, A. E.
Winchester, P. G. D.

Reported Sept 21st.

KILLED.—Bach, Sec. Lt. E. L., R.A.F.
Bartlett, Capt. M., R.A.F.
Barlow, Sec. Lt. H. F., R.A.F.
Dinwoodie, Sec. Lt. G. S., H.L.I. and R.A.F
Kidd, Sec. Lt. V. M., R.A.F.
King, Capt. C., R.A.F.
McCallum, Lt. A. R., R.A.F.
Querrie, Sec. Lt. H. W., R.A.F.
Righton, Lt. W., R.A.F.
Sellar, Sec. Lt. W. R., R.A.F.

DIED OF WOUNDS.—Sheridan, Sec. Lt. C. J. C., R.A.F

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Bingham, Lt. A. E., R.A.F.
Burn, Sec. Lt., J. S., R.A.F.
Garrett, Sec. Lt. B. N., R.A.F.
Hinchliffe, Sec. Lt. H. E., Manch. R., attd. R.A.F.
Ingram, Sec. Lt. L. J. W., R.A.F.
Mallett, Sec. Lt. D., R.A.F.
Michell, Lt. P. C., R.A.F.
Penruddocke, Lt. N. F., A.S.C. and R.A.F
Smith, Lt. A., Linc. R., attd. R.A.F.
Thompson, Lt. J. W., R.A.F.
Van Tilburg, Sec. Lt. J. A., R.A.F.
Vosper, Lt. R. A., R.A.F.

PREVIOUSLY REPORTED MISSING, BELIEVED PRISONERS OF WAR, NOW REPORTED PRISONERS OF WAR.—Cross, Sec. Lt. H. L., R.A.F.
Marshall, Sec Lt. N. H., R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONER OF WAR.—Austin, Lt. H., R.A.F.

CADETS KILLED.—Doney, C. A.
Gorman, D W.
Hill, H.
Lomax, C.
Parr, D. A.

Reported Sept. 23rd.

KILLED.—Alsford, Sec. Lt. H. E., R.F.A.
Brindley, Sec. Lt. V. G., R.A.F.
Crombie, Lt. W. C., M.C., R.A.F.
Cunningham, Sec. Lt. P. J., R.A.F.
Daniel, Lt. A. H. R., R.A.F.
Halley, Sec. Lt. D. B., R.A.F.
Herring, Sec. Lt. G. E., R.A.F.
MacDonald, Sec. Lt. B. J., R.A.F.
Ruxton, Lt. W. H., R. Ir. Regt. and R.A.F.
Stevens, Sec. Lt. H. K., R.A.F.
Young, Sec. Lt. F. R., R.A.F.

WOUNDED.—Bradnam, Lt. C. A., R.A.F.; Gye, Capt. J. A., R.A.F.; Judge, Lt. G. R., R.A.F.; Kelsey, Lt. P. J., R.A.F.; Russell, Sec. Lt. I. D., R.A.F.

MISSING.—Broadbent, Lt. G., R.A.F.; Courtney, Sec. Lt W. E. L., R.A.F.; Dunn, Lt. M. A., R.A.F.; Henry, Lt. R. A., R.G.A. and R.A.F.; Kemp, Sec. Lt. J. E., R.A.F.; Sabey, Sec. Lt. A. R., R.A.F.; Smailes, Sec. Lt. E. B., R.A.F.; Toy, Sec. Lt. E. C., R.A.F.; Wooding, Sec. Lt. J., R.A.F.

CORRECTION.—Cullington, Sec. Lt. A. W., R.A.F., reported missing, should read wounded.

Reported Sept 24th.

KILLED.—Partington, Lt. C., R.A.F.
Russell, Sec. Lt. C. G., R.A.F.
Shedel, Capt. W. G., Royal Fus., attd. R.A.F.
Walker, Sec. Lt. J. G., R.A.F.
Zeally, Lt. E. R., Royal Lancs., attd. R.A.F.

DIED OF WOUNDS.—McQueen, Sec. Lt. H. J., R.A.F.
Mills, Sec. Lt. W. J., Northd. Fus., attd. R.A.F.
Quinton, Sec. Lt. J. G., R.A.F.
Thorp, Sec. Lt. C. E., R.A.F.

MISSING.—Backhouse, Sec. Lt., J. S., Cam. Highrs. and R.A.F.; Guthrie, Lt J. B., R.A.F.; Still, Sec. Lt. G., Cam. Highrs., and R.A.F.; Thornton, Lt. H. V., A.C.C. and R.A.F.

MISSING, BELIEVED KILLED.—Kane, Lt. A. G., S. Wales Bord. and R.A.F.

MISSING, BELIEVED PRISONERS OF WAR.—Clark, Lt. C G., R.A.F.
Summers, Capt. J. K., M.C., R.A.F.

MISSING, BELIEVED DROWNED.—Robinson, Lt R. W., R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Gray, Sec. Lt. R. H., R.A.F.
Irwin, Lt. R. V., R.A.F
Kelly, Sec. Lt. R., Rif. Brig. and R.A.F.
McConchie, Lt. T. L., R.A.F.
Moore, Lt. A., R.A.F.
Thomson, Sec Lt. H. E., R.A.F.
Townley, Lt. D. C., R.A.F.
Whitehead, Sec. Lt. H. R., R.A.F.

INTERNED.—Dear, Lt. J. A., R.A.F.
Dodwell, Sec Lt. T. B., R.A.F.
Wynne-Eyton, Capt. R. M., R.F.A.
Munro, Sec. Lt. J., R.A.F.
Peters, Sec. Lt. J. F. J., R.A.F.

Reported Sept. 25th

KILLED.—Armstrong, Lt. G. W., R.A.F.
Arnold, Lt. J. V., R. Welsh Fus. and R.A.F.
Boswood, Lt. L. J., R.A.F.
Busby, P/F/O D. A., R.A.F.
Garden, Sec Lt. K. C. W., R.A.F.
Holmes, Lt. J. C., R.A.F.
Kidmarsh, Lt. J. M., D. of Well. R. and R.A.F.
Mahoney, Sec. Lt. B. G., R.A.F.

DIED OF WOUNDS.—McNeil, Lt. A. G., R.A.F

MISSING, BELIEVED KILLED.—Franklin, Lt. L. N., R.A.F

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Bartlett, Lt. A. F., R.A.F.; Gray, Sec. Lt. G. M., R.A.F.; Hacklett, Lt. L. A., R.A.F.; Peckham, Lt C. W., R.A.F., Vick, Sec. Lt. H., R.A.F

PREVIOUSLY REPORTED MISSING, NOW REPORTED BELIEVED PRISONER OF WAR.—Gordon, Sec. Lt. C. A., York and Lanc. R., attd. R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONERS OF WAR.—Daltrey, Sec. Lt. F., R.A.F.
Musgrove, Sec. Lt. H. S., R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED BELIEVED WOUNDED AND PRISONER OF WAR.—Conolly, Sec. Lt. S. M., R.A.F.

CASUALTIES AMONG WT.OS., N.C.OS. AND MEN OF THE R.A.F.
THE DATES ARE THOSE OF THE OFFICIAL LIST.

KILLED.

SEPT. 22nd.—Atkinson 116912 Air Mech., 3rd Cl., R. (Clayton, Manchester); Mann 123954 Air Mech., 3rd Cl., A. (Townhead, Glasgow).

SEPT. 24th.—Burnham 228441 2nd Pte., R. C. (East Dulwich); Dawson 12101 Act. Serjt., R. (South Darley, near Matlock); Nye 17931 Serjt.-Mech., G. E. (Poplar).

SEPT. 25th.—Lowe 18288 Serjt.-Clk., J. H. (Fulham); Staniland 221428 1st Pte., C. E. S. (North Kensington).

DIED.

SEPT. 22nd.—Wheeler 3314 Air Mech., 1st Cl., C. (Pimlico, London).

SEPT. 25th.—Dyson 98378 Air Mech., 3rd Cl., W. H. C. (Hammersmith, W.).

DROWNED.

SEPT. 22nd.—Dobson 5014 Serjt.-Mech., L. (Plumstead); Poole 81182 Air Mech., 2nd Cl., J. J. (Pye Bridge, Derbyshire).

DIED OF WOUNDS.

SEPT. 22nd.—Alabaster 53116 Air Mech., 3rd Cl., W. (Hammersmith Road, London, W.); Allan 406711 Serjt.-Mech., A. S (Perth); Dobbie P/11375 Serjt.-Obsr., R. D. (Larbert); Egan 405211 Air Mech., 3rd Cl., J. C. (East Road, London, N.); Lester 25660 Cpl.-Mech. (Actg.-Serjt.), P. A. (Brockley, S.E.).

SEPT. 24th.—Pole 14496 Air Mech., 1st Cl., L. (Leicester).

WOUNDED.

SEPT. 23rd.—Blyth 223197 Serjt., W. S. (Stepney); France 111854, Air Mech., 3rd Cl., M. (Levenshulme); Hall 44966 Air Mech., 3rd Cl., H. W. (Bowes Park, N.); Hoare C.H.15955 1st Pte., E. (Acton Vale, London); Horrocks 9212 Cpl.-Mech. (Actg.-Serjt.), H. (Littleborough); Lee 44985 Air Mech., 1st Cl., D. W. G. (Hornsey); Lovesey 88626 Serjt.-Mech., A. C. (Hereford); Webster 106010 Air Mech., 3rd Cl., A. (Broughty Ferry).

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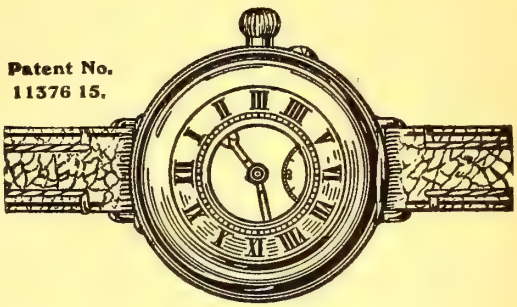
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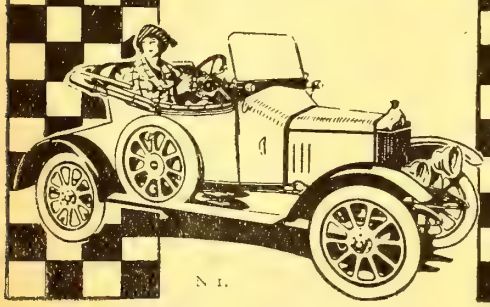
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Sept. 24th.—Armstrong 37312 Cpl.-M., W. (near Brixton, S.W.); Blackmore 112032 Air Mech., 3rd Cl., W. S. M. (East Dulwich); Brady 14076 Cpl.-Mech., W. (West Benwell, Newcastle); Buchan 92923 Serjt.-Obsr., R. W. (Inverurie); Bullock 677 Air Mech., 1st Cl., T. (Malcott Bath); Dixon 21452 Air Mech., 2nd Cl., T. A. (Chelsea, S.W.); Freeman 112111 Air Mech., 1st Cl., J. W. (Eastleigh, Hants); Gale 31626 Cpl.-Mech., J. (Guildord, Surrey); Harvey 21570 Cpl.-Clk., G. (Aberdeen); Lodge 195875 Air Mech., 3rd Cl., W. (Horsford, Yorks); Lynn 107476 Air Mech., 3rd Cl., (Willington, Co. Durham); Parker 127528 2nd Pte., T. F. (Glasgow).

Sept. 25th—Addison 17839 Air Mech., 3rd Cl., A. (Ealing); Bradshaw 87656 Serjt., L. E. (Wakefield); Law 134809 2nd Pte., G. E. (Butley); Littlewood 2705 Ch.-Mech., J. (Holbeck, Leeds); Pearce 139718 2nd Pte., J. (Kirkheaton, Huddersfield); Sandison 100550 Serjt.-Mech., N. (Falkirk); Staunton 48051 Air Mech., 3rd Cl., E. (Liverpool); Talbott 29459 Cpl.-Mech., W. (London, S.W.); Tasker, 49684 Air Mech., 2nd Cl., W. (Coventry), Wilkinson 28983 Air Mech., 1st Cl., H. (Moston, Manchester).

MISSING.

Sept. 23rd.—Davies 4356 Serjt.-Mech., T. H. C. (Tonpentre, Rhondda Valley); Wareing 100507 Serjt.-Obsr. A. T. (Oldham).

PREVIOUSLY REPORTED MISSING, NOW REPORTED MISSING, BELIEVED DEAD.

Sept. 23rd.—Malpas 100024 2nd Pte., D. (Helmshore, near Manchester).

PREVIOUSLY REPORTED MISSING, NOW REPORTED MISSING BELIEVED DEAD.

Sept. 25th.—James 213935 1st Pte., L. (Rushden, Northants); Shuker 100435 Serjt.-Mech., W. J. (Burton-on-Trent, Staffs); Tench P/250923 Serjt.-Mech., G. H. (Wolverhampton).

PREVIOUSLY REPORTED MISSING, NOW REPORTED MISSING, BELIEVED PRISONER OF WAR.

Sept. 25th.—Vredenburg 87896 Serjt.-Mech., L. C. (London, W.).

PERSONAL NOTICES.

NAVAL.

DEATH.

SMYTH.—Lt. Gerald Hugh Smyth, R.A.F., whose death was announced last week, was educated at the Perse School, Cambridge. He was keenly interested in flying, but, being unable at the age of 16 to take up a commission, he joined the R.N. armoured cars, under Comdr. Locker-Lampson, seeing service with them in Belgium, France, Russia, Turkey, Rumania, Galicia, and the Caucasus. On his return to England after the revolution in 1917, he obtained a commission in the R.N.A.S., and became a pilot in August. On Sept. 5th, six hours before leaving for the front, he was accidentally killed. For his services rendered in Russia he was awarded the Russian St. Stanislas medal and the medal of St. Ann.

MILITARY.

DEATHS.

ASHWIN.—Lt. G. A. J. Ashwin, R.A.F., who was accidentally killed while flying, was the only son of Mr. John Ashwin, of 5, Crosby Square, E.C. He was educated at Ramsgate College, and when 17½ years of age joined the London Regt. in September, 1914. In January, 1915, he went to France and fought at the second battle of Ypres, Neuve Chapelle, Loos, High Wood, Vimy, and in the Somme, in which actions he was twice wounded. In February, 1917, he returned to England to join in the Royal Flying Corps, and on receiving his commission returned to the front, and after considerable service was killed with his observer

BOSWOOD.—Lt. Leslie John Boswood, R.A.F., was the son of Mr. and Mrs. J. Boswood, of 44, Brownlow Road, Bowes Park, N. He was killed on Sept. 3rd during aerial manœuvres in a home county as the result of an accident in which three other officers lost their lives. He was educated at the Southgate County School, and won the Victor Ludorum Cup two years in succession. He joined the Artists' Rifles in Sept., 1914, and went to France in Feb., 1915, at the age of 17. He served there over two years and gained his commission and wings in the R.F.C. early in 1917. After eight months' flying in France he was sent to England to act as an instructor in aerial fighting.

CAVE.—Sec. Lt. Jasper Edmund Cave, R.A.F., who was killed on Aug. 14th, was the only son of Mr. Edmund Cave, of 86, Hatton Garden, solicitor, and Mrs. Cave, and a nephew of Sir George Cave, the Home Secretary. At the outbreak of the war he was managing a fruit ranch in British Columbia, where he had gone for the benefit of his health, but volunteered and was accepted for service in the Canadian Seaforth Highlanders. After landing in England he applied for transfer to the Air Service, and was granted a commission in the Royal Air Force. While showing a pilot over the line he was seen in aerial combat with an enemy machine, and later both machines were observed to fall out of control.

GOULD.—Capt. (and Flt. Comdr.) Herbert R. Gould, M.C., R.A.F., who was killed about Aug. 14th, was the second son of Mr. and Mrs. Nat Gould, "Newhaven," Bedford.

HILL.—Lt. Harold Belfit Hill, R. W. Kent Regt. and R.A.F., who was killed in a flying accident on Sept. 6th in Scotland, was the second son of William and Katharine Hill, Briars, Nuneaton, late of Polesworth. He was 24 years of age.

HILL.—Lt. Richard Frank Hill, M.C., R.A.F., of Brook House, Jarvis Brook, Crowborough, and Hollymount, Buxted, Sussex, son of the late Frank Hill, and grandson of the late Richard Hill, was born on April 28th, 1899. He was educated at The Grange, Crowborough, and Charterhouse (Weekites), on leaving which at Easter, 1917, he joined the R.F.C., and soon proceeded to France, where he quickly distinguished himself, gaining the Military Cross. On returning to England last autumn he served at home until his death, which occurred on Sept. 17th, as the result of appendicitis, for which he had undergone two operations.

HODGSON.—Lt. Richard Eveleigh Hodgson, King's Liverpool Regt., attd. R.A.F., who was killed in action on Sept. 16th, was elder son of Mr. C. N. Hodgson, one of the masters at Sherborne School. He was 24 years of age, and received his first commission in the Liverpool Regt. in August, 1914, being promoted Lieutenant in June, 1915. Subsequently he qualified for the R.A.F., in which he was serving at the time of his death.

NICHOLLS.—Lt. E. C. H. R. Nicholls, Queen's R. W. Surr. Regt., attd. R.A.F., who was killed on active service on Sept. 20th, was the only son of Mr. and Mrs. E. F. Nicholls, of Weybourne, Woking. He was 20 years of age

PARTINGTON.—Lt. Cyril Partington, R. Warwickshire Regt., attd. R.A.F., who was killed in action on Aug. 30th, was the eldest son of Walter and Lily Partington, 6, Pownall Gardens, Hounslow. He was 22 years of age.

PIM.—Lt. Thomas Pim, R.F.A., attd. R.A.F., was the elder son of Mr. and Mrs. Cecil Pim, of Willow Bank, Kingstown, Dublin. He was educated at Bilton Grange and Wellington, and passed into the Royal Military Academy in Sept., 1914, receiving his commission in April, 1915. He served in Gallipoli, Egypt, and since June, 1916, on another front, and was killed on Aug. 28th, aged 20.

ROYLE.—Capt. Leopold Victor Royle, M.C., Flt. Comdr., R.A.F., whose death was announced recently, was killed whilst flying on a scout patrol. Born in 1882, he was educated at Wellington College. He joined the Egyptian Government service in 1900, and served continuously in the Coastguard Administration until war broke out, when he was lent to the R.F.C. He saw much service on the Canal and Sinai Peninsula as an observer with the R.F.C., and when the Turks induced the Senussi to take up arms in 1915 he was transferred to the Western Desert, and served as Intelligence officer to the British force operating in that area. His special knowledge of the language and character of the Western Beduins, and especially of the Senussi—he was one of the few Englishmen who had actually met Said Ahmed, the Grand Senussi, and was on terms of friendship with Said Idris, the present head of the Senussi—rendered his services particularly valuable. He guided the Duke of Westminster's armoured cars which rescued the crew of the Tara, and for his services on this and other occasions he was awarded the Military Cross. At the beginning of 1917 he took part as Intelligence officer in the operations against the Siwa Oasis, where the Senussi were finally routed, and it was in a large measure due to his intimate knowledge of the Western Desert that these operations were successfully carried out. He was again mentioned in dispatches, and awarded the Italian Medalle ad Valore and the Egyptian Order of the Nile. At the conclusion of these operations the Egyptian Government claimed Captain Royle's services, and he was appointed Governor of the Western Province, which embraced the coastal sector west of Alexandria and also the Siwa Oasis. He was also given the local rank of major. After repeated applications to the Egyptian Government for his release, he was permitted to rejoin the R.F.C. at the end of 1917, and, after passing all examinations, obtained his "wings," and was appointed to the command of a scout flight at the front, to which he proceeded in March, 1918, and where he served continuously until his death.

SANDERS.—Lt. Reginald Horace Sanders, R.E., R.A.F., was killed in a flying accident at Eastbourne. He had seen four years' foreign service at Gallipoli, in Egypt, and in the operations connected with the capture of Jerusalem, after which he joined the R.A.F., and returned to England in July. Mr. Sanders was the eldest son of Dr. and Mrs. Horace Sanders, of Valetta, Hampden Park, Sussex, late of Hampstead, N.W. He was 23 years of age.

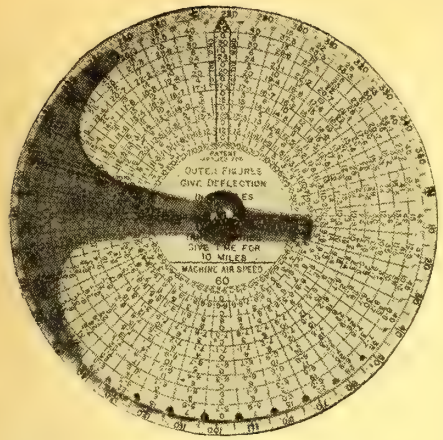
THORP.—Sec. Lt. Charles Evans Thorp, R.A.F. (observer), whose death was announced last week, was educated at Laleham College, Margate, and St. Paul's School. He joined the Artists Rifles, O.T.C., in September, 1917, and transferred to the Royal Air Force (then the R.F.C.) in January, 1918. He went to the front on Aug. 18th last, and had been in action five times.

ENGAGEMENTS.

COGAN—KERRISON.—A marriage has been arranged, and will shortly take place, between Maj. F. J. L. Cogan, R.A. and R.A.F., and Elisabeth, widow of Lt.-Col. R. O. Kerrison, Hussars.

HARDIE—CLARKE.—A marriage has been arranged, and will take place on October 5th at 2.30, at the parish church, Bromley, Kent, between Capt. Frederick Russel Hardie, Hussars, attd. R.A.F., younger son of Mr. and Mrs. William Hardie, of 50, Victoria Road, Kensington, and Estelle, daughter of Charles Harwood Clarke, of Whitley Bay, Northumberland. There will be no reception, but friends are cordially invited to the church.

WOOD—RENNIE.—The marriage arranged between Mr. Arthur F. Wood, A.D.C., R.A., attd. R.A.F., and Miss Daisy Martyn Rennie will take place in Glasgow on Oct 12th.



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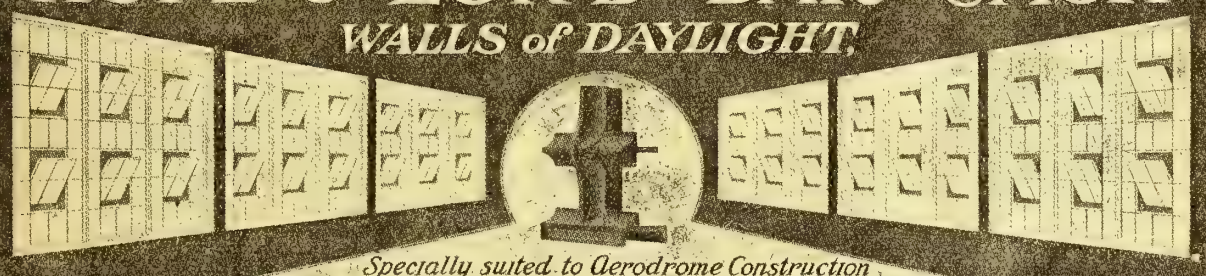
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MARRIAGES.

BARRINGTON-KENNETT—MALCOLMSON.—On Sept. 17th, at St. Peter's, Cranley Gardens, Sussex, Lt. Godwin Austen Barrington-Kennett, King's African Rifles, was married to Beryl Eileen, only daughter of the late Kinloch Malcolmson, by the Rev. Wilfred Youard, Vicar of East Grinstead and the Rev. John Penrose, Rector of Petworth.

COWIE—DUTTSON.—On Sept. 18th, at St. Luke's, Redcliffe Square, South Kensington, S.W., Lt. J. Douglas Cowie, Argyll and Sutherland Highlanders and R.A.F., only son of Mr. and Mrs. J. W. Cowie, Heathside, Putney, S.W., was married to Phyllis May, only daughter of Mr. Stanley Duttson, 19, Bramham Gardens, South Kensington, S.W., by the Rev. C. L. Parker, M.A.

HAMERSLEY—LEES.—On Sept. 19th, at Emmanuel Church, Clifton, Glos., Capt. H. A. Hamersley, M.C., R.A.F., eldest son of Mr. and Mrs. H. Hamersley, Guildford, West Australia, was married to Clarice, only daughter of the late C. E. Lees, Esq., 34th Pioneers, I.A., and of Mrs. Carter, Jesmond Dene, Wellington College Station, Berks, by the Rt. Rev. Bishop Stileman, D.D.

MOLLER—DAVIES.—On Sept. 15th, at Chelsea, Maj. F. S. Moller, M.C., R.A.F., eldest son of Mr. and Mrs H. C. Moller, of Chelsea, was married to Lilian Anne Louise, daughter of Mr. and Mrs. Morgan Davies, of Cardiff.

PRANCE—GOVER.—On Sept. 18th, at St. Matthew's, St. Petersburgh Place, W., Maj. H. Waymouth Prance, R.A.F., late Second in Command of London Regt. (Gallipoli campaign), son of the late Miles Prance, Barrister-at-law, and Mrs. Prance, of 39, Westbourne Gardens, W., was married to Aithna Constance Frances, only daughter of Mr. and Mrs. C. S. Gover, of 8, Moscow Court, W.

WELLS—BLOXSOME.—On Sept 18th, at St. Paul's, Knightsbridge, by the Rev. E. G. Swain, Rector of Greenford, Maj. Ronald Wells, M.C., R.A.F., was married to Thelma, only daughter of Mr. and Mrs. Reginald Bloxsome, 203, Knightsbridge.

BIRTH.

CHARLTON.—On Sept. 7th, at 5, Glencairn Road, Streatham, to Doris (née Osborne), the wife Lt. Brian Charlton, Tanks and R.A.F., of a son.

* * *

Lt. J. P. L. Haynes, R.F.C., has been missing since March 11th. Will the friends of prisoners of war in Germany kindly inquire for news of him? Information will be gratefully received by Canon Haynes, Vicarage, Ormskirk.

AIR FORCE.

DEATHS.

BLACKIE and BELYEA.—Whilst flying at a great height over a southern county the machines of Lt. Austin Wyard Blackie, R.A.F., and Sec. Lt. Arthur Fred Belyea, R.A.F., collided and crashed, both aviators being instantly killed.

BUTLER.—Sec. Lt. J. Ormonde Butler, R.A.F., who died on April 11th as a prisoner of war from wounds received while flying at the front, was the only son of the Rev. R. M. P. and Mrs. Butler, of Priston Rectory, Bath, and was educated at Harrow, where he was head of his house (the Headmaster's). He had also entered at Trinity College, Cambridge, but took up a commission at the end of last year, and went to the front in the beginning of January. A memorial service was held recently at Priston Church, which was conducted by the Rev. E. Ormonde Butler, vicar of Eggleston. An address was given by the Rev. Lionel Ford, Headmaster of Harrow, who also dedicated a white altar frontal and a white marble tablet and shrine in memory of Mr. Butler.

EDWARDS.—Lt. Cedric George Edwards, D.F.C., R.A.F., who was previously reported missing on Aug. 27th, is now reported killed in action on that date. He was the elder son of Mr. and Mrs. J. F. Edwards, of The Homestead, Lemsford Road, St. Albans, and was 19 years of age.

HOLLAND, ELY, MARRIOTT, and WILSON.—Capt. Algernon Holland and Air-Mechanics Ely, Marriott, and Francis E. Wilson lost their lives in a flying accident on the East Coast of Scotland on Sept. 21st. Lt. Atkins, an observer, is suffering from shock. The machine was flying low when it was seen suddenly to burst into flames. Mr. Atkins was able to throw himself into the water, from which he was speedily rescued. A steamer was set on fire as the result of the accident, and damage was done to the vessel.

Capt. Holland was the fifth son of Mr. and Mrs. A. C. Holland, Dunedin, Horsham.

JINMAN.—Sec. Lt. (Obsr.) Ewart W. F. Jinman, R.A.F., who was killed in action on Aug. 14th, was the youngest son of Mr. and Mrs. Jinman, Croydon. He was 19 years of age.

MORRIS.—Captain Norman Preston Morris, R.A.F., who died on Sept. 17th as the result of an accident, was the husband of Leslie A. Morris, of "Breezepoint," Reigate, and second son of the late Arthur Morris and of Mrs. Morris, Dungate Manor, Reigate. He was 42 years of age.

PERCIVAL.—Flt. Cadet Harold K. Percival, R.A.F., was killed while flying in Scotland on Sept. 23rd. He was 28 years of age. His father is a clergyman in Australia.

ROGERSON.—Gerald Christie Rogerson, R.A.F., who died on September 16th, was the elder son of Mr. and Mrs. H. P. Rogerson, Eversleigh, Bishops Stortford.

ENGAGEMENTS.

HARRIES—HARRIS.—An engagement is announced between Capt. Humphrey H. Harries, R.A.F., youngest son of the late Barrett H. Harries, of Byfleet, Surrey, and "Biddy," only daughter of Mr. and Mrs. Ernest Harris, of Westholme, Bognor, Sussex, and York.

ROMER—WALL.—The engagement is announced between Lt. Robert Parbury Romer, R.A.F., eldest son of Mr. and Mrs. Romer, of Ravendene, Stanmore, and Evelyn Margaret, second daughter of Mr. and Mrs. Wall, of Pynnacles, Stanmore.

SHAW—MAY.—An engagement is announced between Lt. Evelyn P. M. Shaw, R.A.F., only son of Mr. P. W. Shaw, M.I.C.E., M.I.M.E., and Mrs. Shaw, of Adelaide, Australia,

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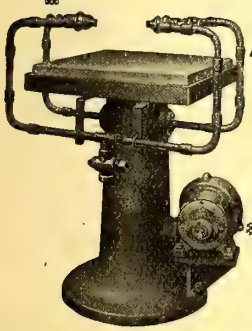
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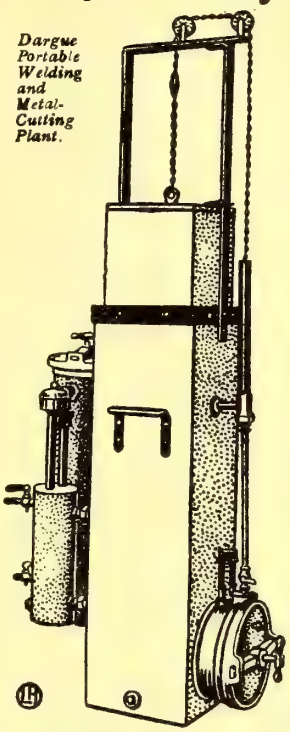
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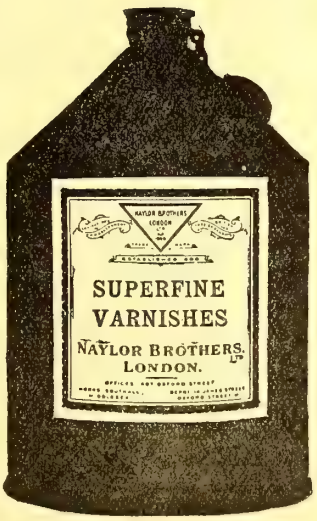
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MARRIAGES.

BIGNELL—PAINE.—On Sept. 9th, at Kingsroad Chapel, Reading, Capt. Charles S. Bignell, R.A.F., of Shanghai, eldest son of the late Mr. Bignell and Mrs. Bignell, of Golders Green, was married to Gladys Emily, only child of the late Henry Meynell Paine, Esq. (and granddaughter of the late Mr. Joseph Caine Paine, R.N., Worthing), and Mrs. Boodle, and step-daughter of Dr. R. M. Boodle, Reading, by the Rev. R. C. Fairbairn, M.A.

BOOTH—COWEN.—On Sept. 21st, at St. Mary's, Shortlands, by Rev. Harrington C. Lees, Vicar of Christ Church, Beckenham, assisted by Rev. H. T. Knight, Vicar of St. Mary's, Sec. Lt. Sydney Edwin, R.A.F, only son of the late Edwin Booth (of Sydney, N.S.W.), and of Mrs. E. Booth, of Manor Grove, Beckenham, was married by special licence to Hilda Winifred, third daughter of Mr. George Cowen, of Heathfield, Scott's Lane, Shortlands.

BUSS—LARKINS.—On Sept. 17th, at Dawlish, Maj H. A. Buss, D.S.O., R.A.F., younger son of H. S. Buss, Esq., of Ambry Court, St. Nicholas at Wade, Thanet, was married to Edwina Florence, only daughter of W. R. Larkins, late Major, East Surrey Regt., and of Mrs. Larkins, by the Rev. F. Simmons, Vicar.

CLIFFORD—HILLIARD.—The marriage of Lt. Colin H. Clifford, R.A.F., third son of George William Clifford, St. Hillary, Poole Road, Bournemouth, and Evangeline, only daughter of the Rev. E. S. Hilliard, Vicar of Christ Church, Mayfair, took place at Christ Church, Down Street, on Sept. 17th.

GIBBS—GOLDBY.—On Sept. 21st, at St. Helen's, Abbotsham, by the Rev. Canon Kempe, Charles Gibbs, Sub-Lt., R.N.V.R., was married to Maude (Paddy), W.R.A.F., elder daughter of Mr. and Mrs. H Goldby, of Keene, Abbotsham, N Devon.

RAE-FRASER—GRIEVE.—On Sept. 19th, at Holy Trinity Church, Brompton, London, Capt. George Gerald Rae-Fraser, R.A.F., elder son of the late George Rae-Fraser, of Piggott's Manor, Letchmore Heath, Herts, and 31, Copthall Avenue, London, was married to Elinor Vera, only surviving daughter of William Grieve, of Rockcliffe, Dalbeattie, N.B., and 13, Fenchurch Avenue, London, by the Rev. Prebendary Gough, Vicar of the Parish, assisted by the Rev. E. L. Browne. St. Andrew's School, Eastbourne.

TURNEY—ROBINSON.—On Sept. 21st, at St. Peter's, Streatham Hill, Bert Ernest Turney, Lt., R.A.F., second son of Mrs. Turney, of Streatham, was married to Beatrice Maude, eldest daughter of Mr. and Mrs. Ernest J. Robinson, of 85, Broxholm Road, West Norwood.

WOODCOCK—DICKINSON.—On Sept. 12th, at the Chapel Royal, Savoy, Lt.-Col. H. L. Woodcock, R.A.F., was married to Ethel, eldest daughter of W. T. Birch, Cape Town, South Africa.

WOODRUFFE-PEACOCK—STRONACH.—On Sept. 18th, at St John's Church, Caterham Valley, Lt. Dennis Max Cornelius Woodruffe-Peacock, R.A.F., eldest son of the Rev. Edward Adrian Woodruffe-Peacock, M.A., Cadney, Lincolnshire, was married to Gladys Haynes, daughter of the late John Stronach, of Huntley, and adopted daughter of David Edgar and Helen Parry, of Roseneath, Caterham Valley, by the Vicar, the Rev. Fergus-Wood, M.A.

BIRTHS.

BREESE.—On Sept. 16th, 1918, at 16, Gerald Road, Eaton Square, the wife of Col. Charles Breese, R.A.F., of a son.

DONALD.—On Sept. 15th, in a nursing home, to Gwynneth, wife of Capt. D. Grahame Donald, R.A.F.—a daughter.

GREENWOOD.—On Sept. 14th, at Broadfield, Kingswinford, Staffs, the wife of Maj. B. P. Greenwood, R.A.F., of a daughter.

PAYN.—On Sept. 11th, at Lanrick, Percy Road, Boscombe, to Evelyn, wife of Maj. H. J. Payn, R.A.F.—a son.

SCOTT.—On Sept. 14th, 1918, to Capt. L. G. Scott, R.A.F., and Mrs. Scott—a daughter.

SMITH.—On Sept. 13th, 1918, at 5, Kensington Gate, Glasgow, W., the wife of Col. S. E. Smith, R.A.F., of a son.

STEWART.—On Sept. 12th, at The Lodge, Waddington, near Lincoln, to Capt. Douglas Stewart, R.A.F., and Mrs. Stewart—a daughter (still-born).

WILLS.—On Sept. 18th, at Sunny Nook, Hartington Road, Aldeburgh, the wife of Lt. F. L. Wills, "O," R.A.F., of a son.

WOODS.—On Sept. 18th, at "Rangiora," Arthur Road, Wimbledon Park, the wife of Capt. Norman E Woods, R.A.F., of a son.

* * *

Sec. Lt. Trevor Hawkins, R.A.F., was reported missing on July 20th. Any information will gratefully be received by Ockwell Hawkins, Werfa, Aberdare.

* * *

Lt. C. B. H. Lefroy, R.A.F., has been missing since Aug. 8th. He was flying on the Western Front. Will friends of Prisoners of War in Germany kindly inquire and communicate any

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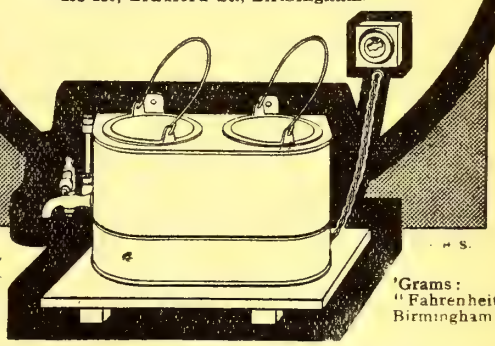
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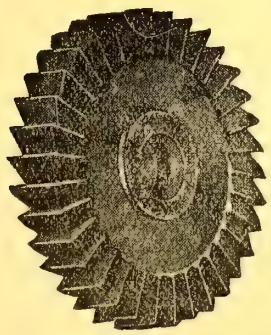
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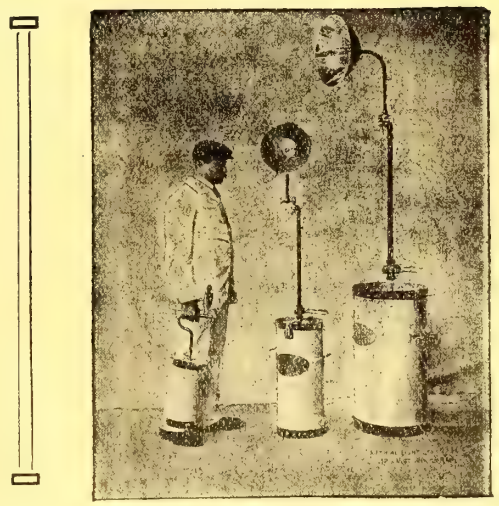
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* * *

Capt. Kenneth Charles Mills, R.A.F., has been missing since Aug. 8th. Will those writing to prisoners of war or hospitals in Germany kindly inquire for news of him, and communicate with Mr. C. Mills, 31, Campden House Road, Kensington, W.8?

* * *

Lt. Richard F. Lewis, R.A.F., has been missing since July 25th. Will those writing to prisoners of war, Germany, kindly inquire for news, and write to Mrs K. Lewis, Hillside, Pentre, Rhondda?

FOREIGN COMMUNIQUES.

FRANCE.

SEPT. 17th.—During Sept. 16th six enemy machines were brought down or driven down out of control, and one captive balloon was brought down in flames.

Our night-bombing service carried on its work despite the tempest and rain which were raging. More than 10 tons of bombs were dropped on hostile railway stations, bivouacs and aerodromes. Several fires were observed.

SEPT. 18th.—On the 14th inst. Sous-Lt. Coiffard set fire to two enemy captive balloons and three more on the 15th. This brings up to 30 his total of aircraft brought down.

SEPT. 18th.—During the day of Sept. 16th six enemy machines were brought down and one captive balloon was brought down in flames. Our night bombing machines worked in spite of the storm and rain. More than 10 tons of bombs were dropped on the stations, bivouacs and enemy aerodromes. Many fires were noted.

SEPT. 21st.—During Friday the activity of our air service was slight, owing to the unfavourable weather. It cleared up during the night, when our bombarding aviators dropped nearly 18 tons of bombs on enemy aerodromes, particularly on the aerodromes of the night-bombarding squadrons and on the junctions of important railway lines. Particularly successful results were observed, notably on the aerodromes of Stenay and Marville, where fires broke out, and on the railway stations of Etain, Buzancourt, and Jainville, where fires and explosions were noted.

Sous-Lt. Ambrogi brought down in flames on Sept. 15th and 16th two captive balloons, which brings to 11 the number of aircraft brought down by this pilot.

ARMY OF THE ORIENT.—The pursuit of the beaten Bulgarian forces between the Tcherna and the Vardar is being methodically carried out.

Our aviators unweariedly bombed and turned their machine-guns on the retreating Bulgarian columns.

SEPT. 22nd.—ARMY OF THE ORIENT.—During Sept. 21st the Franco-Serbian Armies on the Drachevisko Massif broke the serious resistance set up by Bulgarian rearguards which had been reinforced by German troops.

Our aviators continue to harass the retreating enemy columns.

SEPT. 23rd.—Sous-Lt. Herisson brought down two aeroplanes on Sept. 18th, making the tenth and eleventh victories of this pilot.

ARMY OF THE ORIENT.—On the roads in the region of Monastir, Krusevo, and Prilep enemy columns are fleeing in indescribable disorder under incessant machine-gun fire and bombing by Allied aviators.

ITALY.

SEPT. 18th.—In various aerial bombardment actions, aviation camps and military establishments in Sugana Valley and between the Piave and Tagliamento were effectively bombed. Two enemy aeroplanes were brought down in combats.

SEPT. 18th.—Italian and Allied aeroplanes carried out effective bombardments of military plants at Levico (Val Sugana) and hostile aviation camps in the Adige Valley and on the Venetian Plain. Three machines and one Drachen balloon were brought down.

SEPT. 19th.—Three hostile aeroplanes were brought down and a fourth machine forced to land.

SEPT. 20th.—One of our flights bombarded with over a ton of bombs the arsenal of Pola, the dockyards and depots of the Ulivi Reef, obtaining effective results. Two hostile machines were brought down and three others were driven down out of control.

SEPT. 21st.—One hostile aeroplane was brought down in air fighting.

SEPT. 22nd.—The following are details of the work of the Italian and American naval aircraft in the gulfs of Venice, Trieste, and on the Quarnero.

Half a ton of explosives was dropped at night on the submarine station of Pola on Sept. 15th and over a ton on Sept. 19th. On Sept. 17th in air fighting two enemy machines were forced to descend, and a third fell damaged near Grado. One Italian machine was lost in flying over Fiume. The airsheds at Lagosta Island were bombed on Sept. 19th; and over a ton of explosives was dropped on military barracks in Albania, causing big fires, on the 14th. One machine is missing.

The roads of Durazzo were bombed on Sept. 17th, 19th, and 20th with two tons of explosives, two steamers have been seriously damaged, and a big fire was observed near the enemy aircraft station. The enemy bombed Venice without doing any military damage.

SEPT. 23rd.—Two hostile aeroplanes were brought down in air fighting.

GERMANY.

SEPT. 17th.—Yesterday we shot down 44 enemy aeroplanes. Lt. Lörzer achieved his 40th, Lt. Rumey his 35th, and Lt. Thuy his 30th aerial victory.

SEPT. 20th.—Over the battlefield between the Meuse and the Moselle, Chaser Squadron No 2, under the command of First Lt. Baron von Boenigk, from Sept. 12th to 18th shot down 81 enemy aeroplanes. It lost, for its part, only two aeroplanes in combat.

Lt. Buechner achieved his 30th aerial victory.

SEPT. 22nd.—Under the protection of dense rolling fire, English infantry, accompanied by armoured cars and aviators, advanced to the attack in the early morning between Gouzeaucourt Wood and Hargicourt.

SEPT. 23rd.—First Lieut. Lörzer obtained his 42nd aerial victory and Lieut. Baumer his 30th.

AUSTRIA.

SEPT. 20th.—ALBANIAN FRONT.—The enemy aerodromes of Valona were attacked successfully by our aviators.

U.S.A.

SEPT. 16th.—Aside from local combats, in which we took prisoners, and a further increase of artillery and aviation activity, there is nothing to report from the St. Mihiel sector.

SEPT. 17th.—In the St. Mihiel sector the day was quiet except for continued activity of artillery and aviation and patrol encounters, in which we captured prisoners.

SEPT. 19th.—In the course of a bombing operation in Lorraine our aviators were attacked by superior forces.

Five of our machines are missing.

SEPT. 21st.—Aside from increased aviation activity in the Woevre, the day was uneventful in the sectors occupied by our troops.

SERBIA.

SEPT. 21st.—Our indefatigable troops have reached important results. Their advance in fighting in the direction north has been in one day more than 15 kilometres. Aviators do not cease bombarding and fire from their mitrailleuses on the enemy's retreating troops.

BELGIUM.

SEPT. 17th.—One of our pilots brought down an enemy balloon in flames on Monday.

SEPT. 23rd.—In the course of the night of September 21st-22nd several of our encampments were bombed by enemy aeroplanes.

BULGARIA.

SEPT. 20th.—East of the Tcherna the German Lance-Serjt. Feseler obtained his 17th aerial victory.

AN ELOPEMENT.

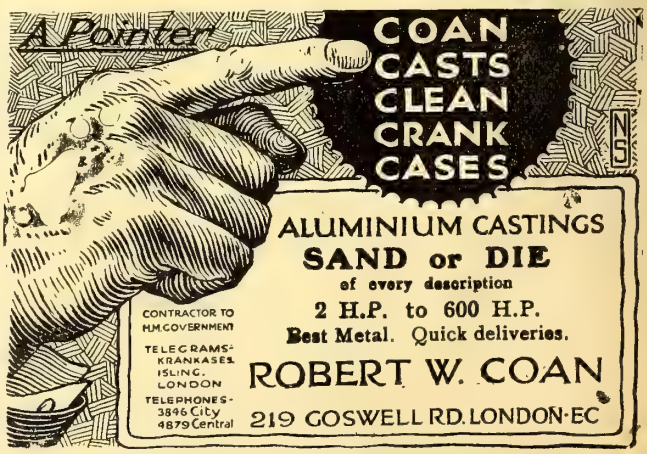
On the heels of the flight of Hun celebrities from their happy Fatherland by the fairway comes the tale of the escape of two of the Austrian unredeemed on a stolen marine aeroplane. Waving a shirt in the thick of the Archies at an Italian coast town an Austrian K. type took the sea safely to everyone's intense surprise a few days ago. On board were two motor mechanics of Italian origin who had stolen the machine of their O.C. under the pretence of warming up the engine. Neither having ever piloted an aeroplane before their flight oversea to Italy deserved the happy ending it reached.—T. S. H.

A DESERVED REWARD.

News has been received of the award to Captain Wedgwood Benn, D.S.O., M.P., of the Distinguished Flying Cross.

Since he joined the Army in October, 1914, Capt. Benn has only twice been in this country for short periods of leave, and the present award is the third distinction that he has earned. The D.S.O. was secured by him on the occasion of the sinking of the Ben Machree, when, as the official dispatch records, he went away in a boat to search for men who were missing and was exposed to very heavy shell fire. He took part in the defence of Castelorizo against the Turks in 1917, and for services then rendered he was mentioned in the French Orders of the Day and decorated with the Croix de Guerre. Since June, 1917, he has been serving with the Royal Air Force in Italy.

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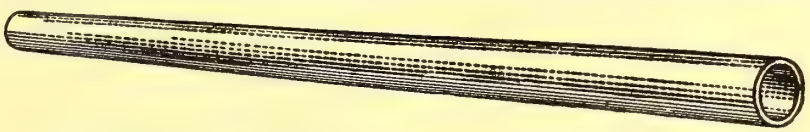
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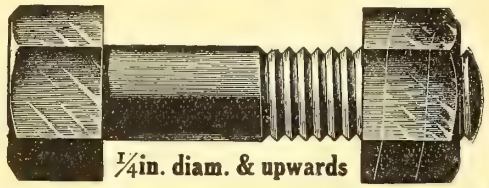
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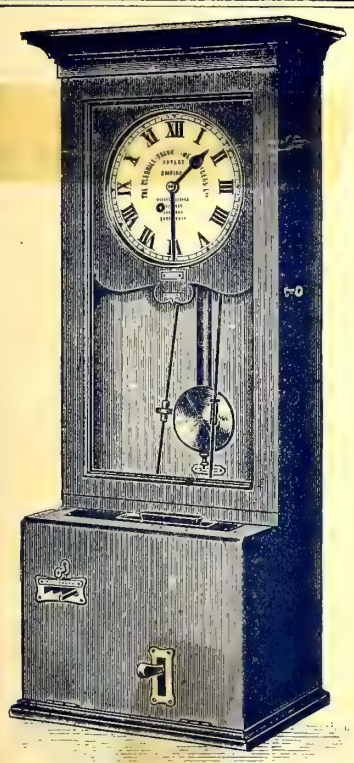


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EDITORIAL AND ADVERTISEMENT OFFICES, 166, PICCADILLY, W.1.

Printed for The Aeroplane and General Publishing Co., Ltd., by Bonner & Co., The Chancery Lane Press, Rolls Pas London; and Published by The Rolls House Publishing Company, Ltd., at Rolls House, Breams Buildings, Lond


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